

ional Bureau of
Library, N.W. Bldg
FEB 5 1963

Reference book not to be
taken from the library.

Copy

CRPL-F 221 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
JANUARY 1963

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

National Bureau of Standards

MAR 24 1961

122,437

QC503

.1104

100

100

SOLAR - GEOPHYSICAL DATA

CONTENTS

I DAILY SOLAR INDICES

- (a) Relative Sunspot Numbers and 2800 Mc Solar Flux - November - December 1962
- (b) Graph of Sunspot Cycle

II SOLAR CENTERS OF ACTIVITY

- (a) Calcium Plage and Sunspot Regions - December 1962
- (b) Magnetic Classifications of Sunspots (Mt. Wilson) - December 1962
- (c) Provisional Coronal Line Emission Indices - December 1962

III SOLAR FLARES

- (a-d) Optical Observations - December 1962
- (e) Flare Patrol Observations - December 1962
- (f-l) Optical Observations - September 1962
- (m) Flare Patrol Observations - September 1962
- (n) Ionospheric Effects (SWF-SEA-SCNA-SPA-Bursts) - November 1962

IV SOLAR RADIO WAVES

- (a) 2800 Mc - Outstanding Occurrences (ARO-Ottawa) - December 1962
- (b) 2800 Mc - Outstanding Occurrence (ARO-Ottawa) - December 18, 1962
- (c) 221 Mc - Interferometric Occurrences (Boeing - Seattle) - April-December 1962
- (d) 169 Mc - Interferometric Occurrences (Nangay) - December 1962
- (d) 108 Mc - Outstanding Occurrences (Boulder) - December 1962
- (f) 7.6 - 41 Mc - Spectrum Observations (HAO-Boulder) - December 1962
- (g-l) 9.1 cm - Spectroheliograms (Stanford) - December 1962

V COSMIC RAY INDICES

- (a) Climax Neutron Monitor - November 1962
- (b) Deep River Neutron Monitor - November 1962

VI GEOMAGNETIC ACTIVITY INDICES

- (a) C, Kp, Ap and Selected Quiet and Disturbed Days - November 1962
- (b) Chart of Kp by Solar Rotations - 1962

VII RADIO PROPAGATION QUALITY INDICES

- (a) CRPL Quality Figures and Forecasts - North Atlantic and North Pacific - November 1962
- (b) Graphs Comparing Forecasts and Observed Quality - North Atlantic and North Pacific - November 1962
- (c-d) Graphs of Useful Frequency Ranges - November 1962

VIII ALERT PERIODS AND SPECIAL WORLD INTERVALS

- (a) Alerts and SWI - December 1962

The text was republished in November 1962. A revision was published in December 1962. An addendum is published below.

221 Mc Interferometric Observations

The Geo-Astrophysics Laboratory of Boeing Scientific Research Laboratories at Seattle, Washington operates a swept-lobe interferometer as part of its program of research in solar physics. The frequency of operation is 221.54 Mc. The antennas are two 10-element Yagis which track the sun. The present baseline is 324 feet. A continuous measurement of the position of the radio center of gravity relative to its position at meridian transit is made through the use of a digitally-operated phase-compensating device. Other details of the system are given in Boeing Document DL-82-0122, "Boeing Lobe Sweep Interferometer System," by John Lansinger and Ralph Gagnon, copies of which are available.

The data presentation is in the form of amplitude and phase recordings. Two quasi-logarithmic amplitude recorders are used. Of these the higher sensitivity one reaches full scale deflection at a flux level a little greater than $70 \times 10^{-22} \text{ wm}^{-2} (\text{cps})^{-1}$. Full scale deflection on the other corresponds to a flux of about $40,000 \times 10^{-22} \text{ wm}^{-2} (\text{cps})^{-1}$. The phase recorder provides an indication of difference of phase between the burst and the radio center of gravity of the sun, from which the position of the burst can be estimated.

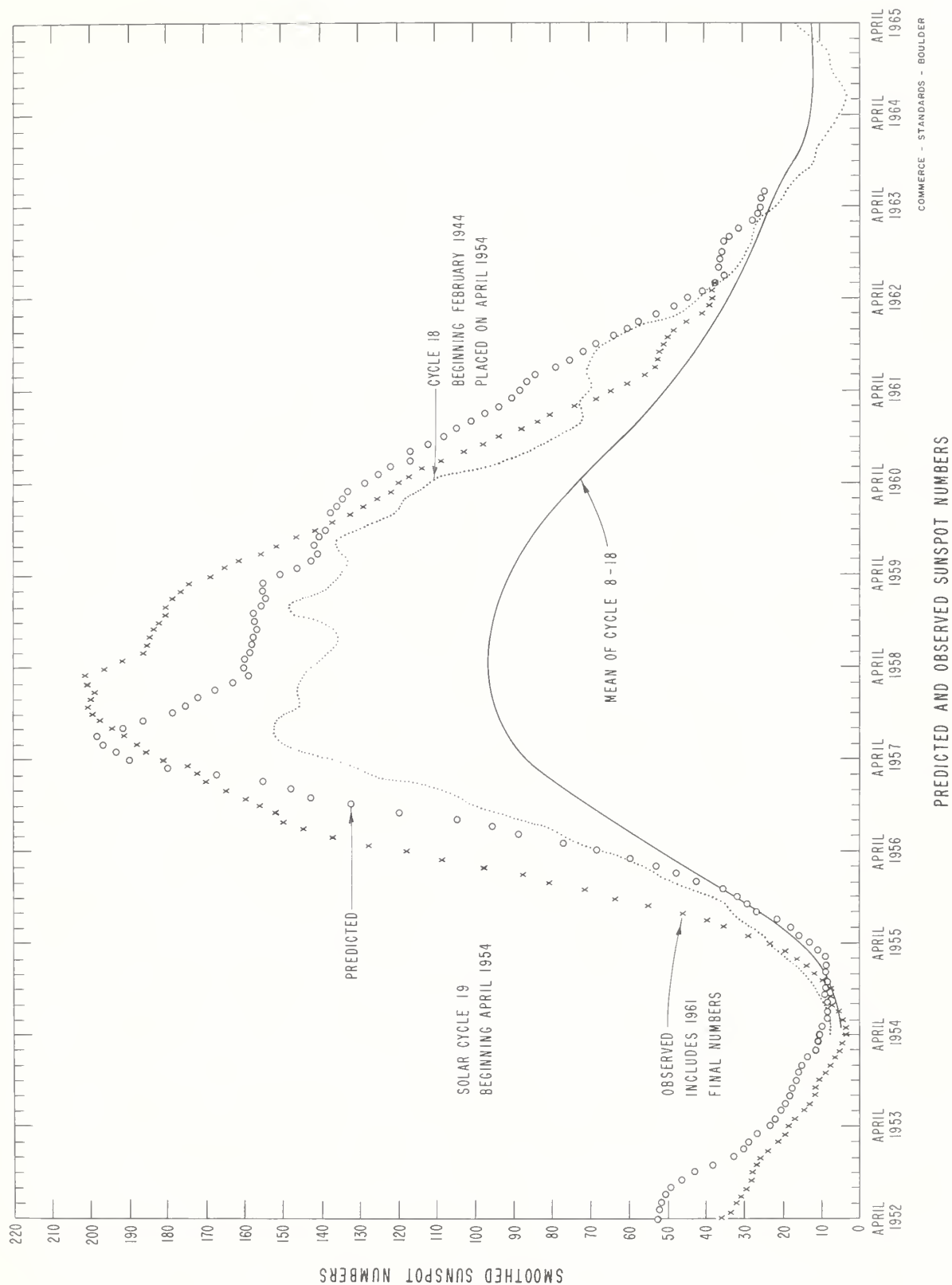
The burst data are described in accordance with the definitions given in the IAU Quarterly Bulletin on Solar Activity. Thus the symbols s, c, f and e refer to simple and complex variations of intensity, group of bursts and sudden beginning of burst respectively. RF denotes a more or less irregular rise and fall of intensity. Major bursts are those with a duration of about three minutes or more and with an energy content of the order $750 \times 10^{-22} \text{ wm}^{-2} (\text{cps})^{-1}$ or greater.

DAILY SOLAR INDICES

Nov. 1962	American Relative Sunspot Numbers R_A'
1	8
2	17
3	13
4	5
5	0
6	11
7	11
8	11
9	11
10	11
11	23
12	38
13	50
14	52
15	65
16	70
17	56
18	43
19	31
20	21
21	15
22	11
23	0
24	13
25	26
26	17
27	11
28	11
29	13
30	14
Mean:	22.6

Dec. 1962	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	27	77
2	29	81
3	37	83
4	42	82
5	43	82
6	46	83
7	48	86
8	28	84
9	25	83
10	12	84
11	10	78
12	10	76
13	18	77
14	24	76
15	12	76
16	0	76
17	14	78
18	23	83
19	30	84
20	45	86
21	32	85
22	28	82
23	23	79
24	32	79
25	23	--
26	14	--
27	0	--
28	7	74
29	0	--
30	0	--
31	7	--
Mean:	22.2	80.6

COMMERCE - STANDARDS - BOULDER



CALCIUM PLAGE AND SUNSPOT REGIONS

DECEMBER 1962

CMP Dec. 1962	Lat	McMath Plage Number	Return of Region	Calcium Plage Data				Sunspot Data		
				CMP Values		History, Age		CMP Values		History
				Area	Int.			Area	Count	
01.7	N02	6626	6612	2600	3	$\ell \searrow \ell$	2	190	1	$\ell - d$
03.0	N13	6632	New	1200	3	$b \wedge \ell$	1	230	12	$b \wedge d$
05.0	N06	6629	6605	900	2	$\ell - d$	3			
05.5	S15	6631	6606	700	2	$\ell \wedge d$	2			
06.1	N18	6637	New	(500)	(3)	b / ℓ	1			
09.9	S15	6639	6611	1800	3	$\ell - \ell$	2	140	3	$\ell \searrow d$
10.2	N17	6638	6613	2200	3	$\ell \wedge \ell$	2			
10.6	N04	6644	6614	300	2	$b - d$	4			
12.0	S17	6641	New	1400	3	$b \wedge d$	1			
14.0	N12	6642	6617	1500	3	$\ell \wedge \ell$	2			
14.6	S16	6643	6616	1900	3.5	$\ell \nearrow \ell$	3	50	1	$b \searrow d$
16.2	S05	6645	New	500	3	$\ell - \ell$	1			
17.7	N11	6646	6618	400	2	$b - d$	6			
18.8	N09	6649	New	1000	3.5	b / ℓ	1	130	7	$b - \ell$
20.1	N10	6647	6621	1100	2	$\ell \searrow \ell$	5			
20.3	S10	6650	New	500	3	$b \searrow d$	1			
21.8	N18	6648	6630	1100	3	$\ell \searrow \ell$	2			
26.5	N04	6653	6635	400	2.5	$\ell - d$	2			
29.0	N02	6654	6626	1800	3	$\ell \wedge \ell$	3			
30.8	S08	6662	New	200	2	$b - d$	1			
31.8	N08	6657	6632	300	2	$b - \ell$	2			

COMMERCE - STANDARDS - BOULDER

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

11b

DECEMBER 1962

Dec. 1962	Time Meas.	Lat.	Mer. Dist.	Type
1	1700	N00 N17	W06 E19	α p β p
2	2335	N00 N17	W23 E02	α p β f
3	1715	N00 N16 S12	W33 W08 E79	α p* β f α p
4	2335	N01 N16 N18 S12	W49 W25 E15 E61	α p β f β p α p
5	1735	N00 N15 N18 N11 S12	W60 E34 E05 E48 E52	α p β p β f β p α p
6	1605	N01 N16 N18 N11 S12 S16	W71 W48 W09 E35 E39 E72	α p α p β p α p α p α p? **

Dec. 1962	Time Meas.	Lat.	Mer. Dist.	Type
7	No obs.			
8	No obs.			
9	2335	S12	W04	α p
10	No obs.			
11	1705	N02 S13 S05	W41 W28 E59	β α p α p
12	No obs.			
13	1655	S05	E33	α p
14	1630	S19 S16 S13 S05	W15 W05 E04 E23	α p β f β p α p
15- 25	No obs.			
26- 30	No spots			
31	No obs.			

COMMERCE - STANDARDS - BOULDER

* Correct for Northern Hemisphere

** Proximity to limb may contribute to observational error

PROVISIONAL CORONAL LINE EMISSION INDICES

DECEMBER 1962

CME Dec 1962	North East Quadrant (observed 7 days earlier)					South East Quadrant (observed 7 days earlier)					South West Quadrant (observed 7 days later)					North West Quadrant (observed 7 days later)				
	G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁		G ₆	G ₁	R ₆	R ₁	
1	32	72	27	60		12	19	29	46		7	12	15	20		22	45	19	36	
2	x	x	x	x		x	x	x	x		10	22	12a	16a		40	53	14a	22a	
3	13	20	13	20		13	15	13	15		9	16	13	19		15	27	12	22	
4	12	24	8	14		13	19	13	18		x	x	x	x		x	x	x	x	
5	15	28	10	12		17	40	18	25		17	22	x	x		22	42	x	x	
6	x	x	x	x		x	x	x	x		17	31	23	28		14	28	26	36	
7	x	x	x	x		x	x	x	x		16	22	14	16		13	17	25	38	
8	x	x	x	x		x	x	x	x		26	39	17	21		16	25	25	61	
9	37	64	47	77		31	45	34	64		30	64	20	24		27	45	22	40	
10	x	x	x	x		x	x	x	x		25	50	x	x		20	25	x	x	
11	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
12	34	56	25	28		30	50	19	29		20	40	7	11		9	11	8	14	
13	20	42	19	34		19	30	22	44		x	x	x	x		x	x	x	x	
14	29	64	10	15		20	38	13	22		20	48	11	15		15	26	7	10	
15	19	28	17	28		12	16	10	16		x	x	x	x		x	x	x	x	
16	11	17	12a	20a		7	11	12a	18a		4	6	10	12		21	31	10	13	
17	8	12	10	16		1	3	10	16		x	x	x	x		x	x	x	x	
18	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
19	25	39	x	x		5	8	x	x		x	x	x	x		x	x	x	x	
20	44	92	28	45		11	17	19	28		5	8	26	28		34	48	26	41	
21	40	104	24	30		5	8	18	25		5	11	x	x		18	31	x	x	
22	32	87	25	31		3	6	13	16		2	6	14	16		13	16	11	12	
23	27	34	11	12		5	8	13	18		6	8	13	16		10	14	7	10	
24	10	15	x	x		2	3	x	x		4	6	7	10		12	16	7	10	
25	x	x	x	x		x	x	x	x		5	8	17	20		16	20	8	10	
26	9	10	5	5		3	8	6	8		x	x	x	x		x	x	x	x	
27	x	x	x	x		x	x	x	x		x	x	x	x		x	x	x	x	
28	13	24	8	17		8	30	9	13		7	12	13	25		12	26	10	10	
29	x	x	x	x		x	x	x	x		14	22	x	x		15	20	x	x	
30	20	34	12	15		10	20	10	11		21	53	30	36		13	17	11	14	
31	x	x	x	x		x	x	x	x		33	87	22	24		12	22	16	20	

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

DECEMBER 1962

OBSERVATORY	DATE 1962	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH — Ha	MAX. INT. — %
ARCTRI	01	0000	0825	NO FLARE	PATROL			1-	2	0859				
	01	0824 E	0859 D		N17 E22									
	01	1010	1330	NO FLARE	PATROL									
	01	1945	1950	NO FLARE	PATROL									
MCWATH	01	2000	2400	NO FLARE	PATROL									
	02	0000	0900	NO FLARE	PATROL									
	02	1005	1330	NO FLARE	PATROL									
	02	1950	2400	NO FLARE	PATROL									
LOCKHEED	03	0000	1405	NO FLARE	PATROL									
	03	1821	1842	1825	S11 E08		6639	1-	2	1625	.20	.70		
	03	2155	2400	NO FLARE	PATROL									
	03	2200	2217	2205	N28 E90			1-	1	2205	.20	1.00		10
WENDEL	04	0000	0910	NO FLARE	PATROL									
	04	0810 E	0845		S20 E76		6639	1+				7.00		
	04	1005	1115	NO FLARE	PATROL									
	04	1115 E	1125 D		N16 W18			1-						
LOCKHEED	04	1120	1405	NO FLARE	PATROL									
	04	1410	1445	NO FLARE	PATROL									
	04	1819	1826	1822	S14 E68			1-	2	1822	.70	1.20		10
	04	2155	2400	NO FLARE	PATROL									
WENDEL	05	0000	0930	NO FLARE	PATROL									
	05	1005	1355	NO FLARE	PATROL									
	05	1011 E	1023 D		N02 W58			1-						
	05	1400	1445	NO FLARE	PATROL									
LOCKHEED	05	2155	2400	NO FLARE	PATROL									
	06	0000	0820	NO FLARE	PATROL									
	06	1005	1130	NO FLARE	PATROL									
	06	1135	1505	NO FLARE	PATROL									
WENDEL	06	1704	1738	1712	N09 E45									
	06	2155	2400	NO FLARE	PATROL			1-	2	1712	.10	.10		20
	07	0000	0845	NO FLARE	PATROL									
	07	0947 E	0959 D		S12 E27			1-						
WENDEL	07	1005	1015	NO FLARE	PATROL									
	07	1020	1505	NO FLARE	PATROL									
	07	2155	2400	NO FLARE	PATROL									
	08	0000	0805	NO FLARE	PATROL									
WENDEL	08	0855	0905	NO FLARE	PATROL									
	08	1005	1415	NO FLARE	PATROL									
	08	1008 E	1028 D		N18 E25			1-						
	08	2155	2400	NO FLARE	PATROL									
WENDEL	09	0000	0935	NO FLARE	PATROL									
	09	0940	1505	NO FLARE	PATROL									
	09	2155	2400	NO FLARE	PATROL									

SOLAR FLARES

DECEMBER 1962

OBSERVATORY	DATE	OBSERVED TIME		LOCATION			DURATION MINUTES	IM- POR- TANCE	OBS. COND.	TIME U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX.	MATH	PLACE					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _g	
OBSERVATORY	DEC 1962													
	10	0000	1400	NO FLARE	PATROL									
	10	1420	1455	NO FLARE	PATROL									
	10	1500	1505	NO FLARE	PATROL									
OBSERVATORY	10	2155	2400	NO FLARE	PATROL									
	11	0000	0755	NO FLARE	PATROL									
	11	0855	0945	NO FLARE	PATROL									
	11	1010	1345	NO FLARE	PATROL									
OBSERVATORY	11	2005	2400	NO FLARE	PATROL									
	12	0000	1330	NO FLARE	PATROL									
	12	1350	1400	NO FLARE	PATROL									
	12	1925	2115	NO FLARE	PATROL									
OBSERVATORY	12	2140	2400	NO FLARE	PATROL									
	13	0000	1335	NO FLARE	PATROL									
	13	1445	1520	NO FLARE	PATROL									
	13	2200	2400	NO FLARE	PATROL									
OBSERVATORY	14	0000	1450	NO FLARE	PATROL									
	14	1658	1815	1725	S13 E03									
	14	2200	2400	NO FLARE	PATROL									
	15	0000	1530	NO FLARE	PATROL									
OBSERVATORY	15	1532 E	1549	1941	S13 W07									
	15	2200	2400	NO FLARE	PATROL									
	16	0000	1000	NO FLARE	PATROL									
	16	1005	1415	NO FLARE	PATROL									
OBSERVATORY	16	1855	2135	NO FLARE	PATROL									
	16	2150	2400	NO FLARE	PATROL									
	17	0000	0845	NO FLARE	PATROL									
	17	1005	1100	NO FLARE	PATROL									
OBSERVATORY	17	1105	1130	NO FLARE	PATROL									
	17	1135	1340	NO FLARE	PATROL									
	17	1345	1435	NO FLARE	PATROL									
	17	1440	2400	NO FLARE	PATROL									
OBSERVATORY	18	0000	0900	NO FLARE	PATROL									
	18	0915	0925	NO FLARE	PATROL									
	18	0955	1420	NO FLARE	PATROL									
	18	1423 E	1445	1502	N10 E04	6649								
OBSERVATORY	18	1450	1515	1502	N10 E06	6649								
	18	1557	1700	1605	N09 E02	6649								
	18	1654	1711	1656	S16 W64	6643								
	18	1730	1750	NO FLARE	PATROL									
OBSERVATORY	18	1800	2400	NO FLARE	PATROL									
	19	0000	0955	NO FLARE	PATROL									
	19	1000	1045	NO FLARE	PATROL									
	19	1000	1045	NO FLARE	PATROL									

SOLAR FLARES

DECEMBER 1962

OBSERVATORY	DATE DEC 1962	OBSERVED TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				TIME	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	
LOCKHEED	19	1050	1110	NO FLARE	PATROL									
	19	1115	1540	NO FLARE	PATROL									
	19	1640	1710	NO FLARE	PATROL									
	19	1720	1725	NO FLARE	PATROL									
	19	1805	2400	NO FLARE	PATROL									
MCMATH	19	2236	2302	2247	S13 W65			1-	1	2247	.70	1.20		10
	20	0000	0905	NO FLARE	PATROL									
	20	1005	1405	NO FLARE	PATROL									
	20	1528	1539	D	N12 W21	6649		1-	1	1532	.20	.20		
	20	1735	1925	NO FLARE	PATROL									
SAC PEAK LOCKHEED	20	1935	2400	NO FLARE	PATROL									
	21	0000	0920	NO FLARE	PATROL									
	21	0925	1320	NO FLARE	PATROL									
	21	1405	1410	NO FLARE	PATROL									
	21	1631	1720	U	N09 W38			1-	3		.54	.56		17
ARCETRI	21	1837	1850	1844	N31 E25			1-	2	1840	.10	.10		10
	21	2200	2400	NO FLARE	PATROL									
	22	0000	0840	NO FLARE	PATROL			1-	2	0918				
	22	0918	E	NO FLARE	N07 W50									
	22	1005	1150	NO FLARE	PATROL									
SAC PEAK	22	1155	1525	NO FLARE	PATROL									
	22	2200	2400	NO FLARE	PATROL									
	23	0000	0945	NO FLARE	PATROL									
	23	1035	1020	NO FLARE	PATROL									
	23	1025	1545	NO FLARE	PATROL									
WENDEL WENDEL	23	1722	1736	1723	N09 W65			1-	3		.47	.78		17
	23	2200	2400	NO FLARE	PATROL									
	24	0000	0850	NO FLARE	PATROL									
	24	0940	0945	NO FLARE	PATROL									
	24	1005	1045	NO FLARE	PATROL									
WENDEL WENDEL	24	1055	1330	NO FLARE	PATROL									
	24	1230	E	NO FLARE	N09 W53	6647		1+				5.00		
	24	1319	E	1252	N04 E23			1-						
	24	1735	2400	NO FLARE	PATROL									
	25	0000	0900	NO FLARE	PATROL									
WENDEL WENDEL	25	1005	2400	NO FLARE	PATROL									
	26	0000	1015	NO FLARE	PATROL									
	26	1030	1030	NO FLARE	PATROL									
	26	1035	1405	NO FLARE	PATROL									
	26	1925	1945	NO FLARE	PATROL									
WENDEL WENDEL	26	1955	2000	NO FLARE	PATROL									
	26	2010	2040	NO FLARE	PATROL									
	26	2155	2400	NO FLARE	PATROL									
	27	0000	1335	NO FLARE	PATROL									

SOLAR FLARES

DECEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
				APPROX.	McMATH PLAGE REGION					TIME — U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX. WIDTH He		MAX. INT f _o F ₂
					LAT.	MER DIST.									
		DEC 1962		START	END	MAX PHASE									
SAC PEAK	27	1415	1515	NO FLARE	PATROL										
	27	1815	1845	NO FLARE	PATROL										
	27	1905	1925	NO FLARE	PATROL										
	27	1935	2400	NO FLARE	PATROL										
	28	0000	0830	NO FLARE	PATROL										
	28	0850	0900	NO FLARE	PATROL										
	28	0905	1410	NO FLARE	PATROL										
	28	1550	1600	NO FLARE	PATROL										
	28	1935	2400	NO FLARE	PATROL										
	29	0000	1520	NO FLARE	PATROL										
	29	2205	2400	NO FLARE	PATROL										
	30	0000	1400	NO FLARE	PATROL										
	30	2205	2400	NO FLARE	PATROL										
	31	0000	1410	NO FLARE	PATROL										
	31	1942	2005	1954	N16 E27			1-	3		*02	*00		17	
	31	2205	2400	NO FLARE	PATROL										

ATHENES	ATHENS, GREECE	HTE-PROVEN	HAUTE-PROVENCE	NEW SCHAUN	FREIBURG, GFR	COMENCE - STANDARD
BAKOU	PIRCULI, USSR	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,	
CAPETOWN	ROYAL OBSERVATORY,	IKOMASAN	KYOTO, JAPAN		NETHERLANDS	
	CAPE OF GOOD HOPE	KIEV KY	KIEV GAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR	
CAPRI F	CAPRI, ITALY (GERMAN)	KYHEED	KIEV KY	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA	
CAPRI S	CAPRI, ITALY (SWEDISH)	MCNATH	LOS ANGELES, CALIF., USA	SALTSJÖBADEN	STOCKHOLM, SWEDEN	
CRIMEE	SIMEIZ, USSR	MCNATH-HULBERT	PONTIAC, MICH., USA	SCHAUNS	SCHAUNSLAND, GFR	
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY,	MOSCOW	MOSCOW-GAISH, USSR	TACHKENT	TASHKENT, USSR	
	HERSTMONCEUX, ENGLAND			WENDEL	WENDELSTEIN, GFR	

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

ATHENES
PIRCULI, USSR
ROYAL OBSERVATORY,
CAPE OF GOOD HOPE
CAPRI, ITALY (GERMAN)
CAPRI S
CRIMEE
SIMEIZ, USSR
ROYAL GREENWICH OBSERVATORY,
HERSTMONCEUX, ENGLAND

HTE-PROVEN
HONOLULU
IKOMASAN
KIEV KO
KIEV KY
LOCKHEED
MCNATH
MCNATH
PONTIAC, MICH., USA
MOSCOW
MOSCOW-GAISH, USSR

HAUTE-PROVENCE
HAWAII, USA
KYOTO, JAPAN
KIEV GAO, USSR
KIEV UNIVERSITY, USSR
LOS ANGELES, CALIF., USA
MCNATH-HULBERT
PONTIAC, MICH., USA
MOSCOW-GAISH, USSR

NEW SCHAUN
NERA
NIZMIR
SAC PEAK
SALTSJÖBÄDEN
SCHAUN
TASHKENT
WENDEL

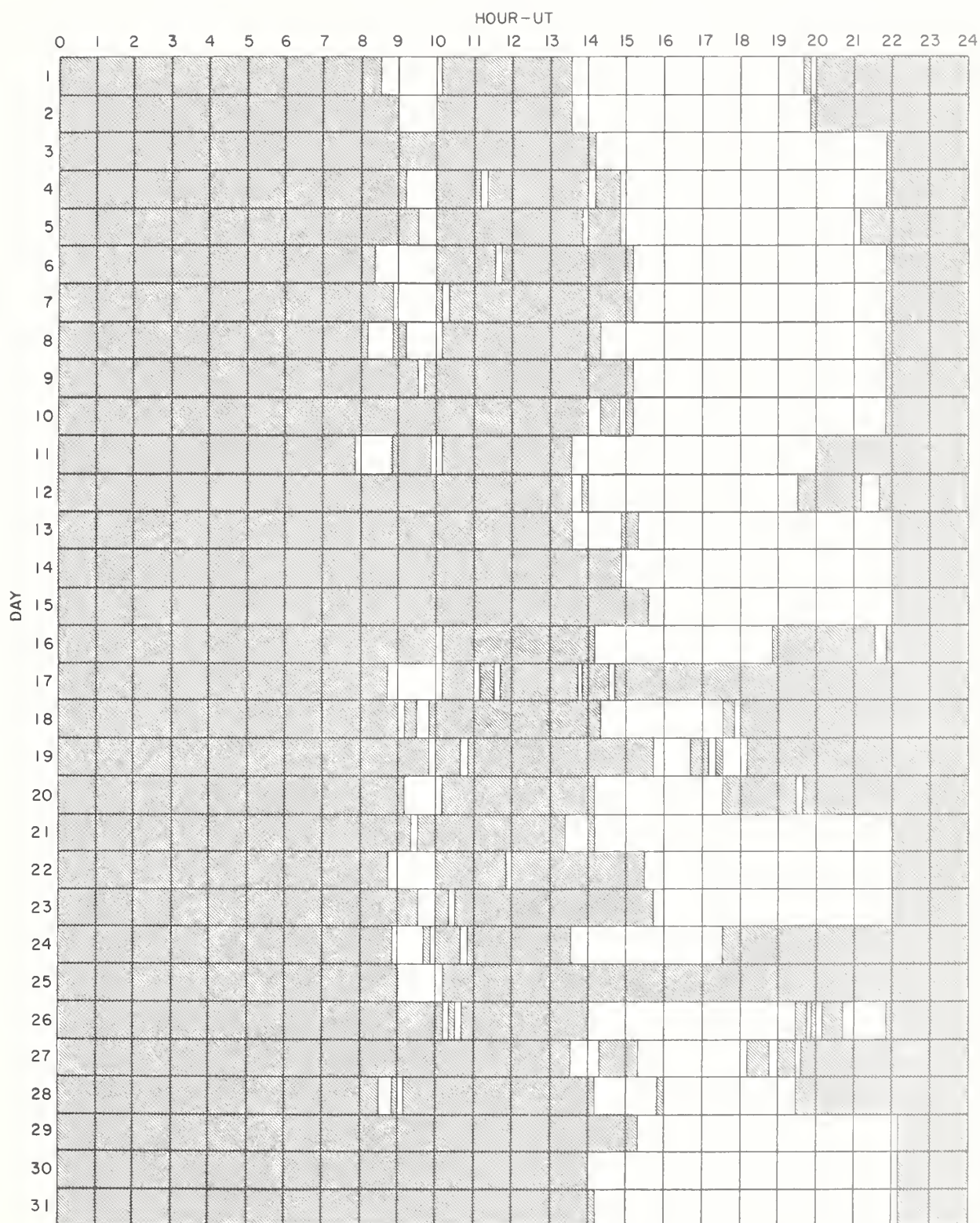
FREIBURG, GFR
NEDERHORST den BERCH,
NETHERLANDS
KRASNAYA PAKHRA, USSR
SACRAMENTO PEAK, N.MEX. USA
STOCKHOLM, SWEDEN
SCHAUNSLAND, GFR
TASHKENT, USSR
WENDELSTEIN, GFR

COMMERCE - STANDARDS

INTERVALS OF NO FLARE PATROL OBSERVATIONS

IIIc

DECEMBER 1962



Stations Included:

Arcetri
Herstmonceux

COMBINE - STANDARDS - BOULDER

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX WIDTH H _g	MAX INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT	MER DIST.	M-MATH PLACE REGION					MEAS AREA Sq Deg	CORR AREA Sq Deg			
ATHENS	01	0225	0240	NO FLARE			155 D	1	2		3.00	3.10			
ATHENS	01	0530 E	0805 D	PATROL			18 D	1	2	0621		4.00			
ZURICH	01	0621 E	0639	S06 E12				1				.70			
BUCHAREST	01	0625 E	0707 D	S07 E09				1	1			.90			
BUCHAREST	01	0707 E	0748 D	S07 E10				1	1			1.00			
SCHAUINS	01	0745	0754	S05 E14				1	1			4.60			
ATHENS	01	0930 E	0905 D	N10 E19			155 D	1+	2	0621		5.00			
ZURICH	01	0621 E	0647	N09 E20			26 D	1	1			1.40			
BUCHAREST	01	0621 E	0719 D	N09 E20				1	1			3.00			
SCHAUINS	01	0635 E	0650 D	N09 E20			15 D	1	1			1.00			
CAPRI-F	01	0645 E		N10 E22				1	1			4.00			
SCHAUINS	01	0818	0836	N08 E20			18	1+	2			2.10			
ATHENS	01	0820 E	0838	N10 E18			18 D	1	3						
ONDREJOV	01	0821 E	0834 D	N09 E20			13 D	1	1	0641					
UCCLE	01	0822 E	0844	N10 E19				1	3	0844					
CAPRI-F	01	0828 E	0840	N10 E21				1	1			1.00			
ATHENS	01	0839	0903 D	N10 E20				1	3		.80	.90			
SCHAUINS	01	0831 E	0836 D	S06 E10				1	2		1.20	1.20			
ATHENS	01	0845 E	0903 D	S05 E11				1	3			1.00			
SCHAUINS	01	0855	0908	S06 E10				1	2			1.00			
CAPRI-F	01	1032 E	1045	S05 E11				1	1			1.00			
AROSA	01	1055 E	1105 D	N09 E18			10 D	1				1.00			
CAPRI-F	01	1058 E	1120	N10 E20				1				1.50			
CAPRI-F	01	1155 E	1210	N10 E19				1				.40			
ATHENS	01	1204 E	1210 D	N09 E18				1	3		.70	.70			
CLIMAX	01	1341	1353	S07 E11				1	1	1344					
ONDREJOV	01	1343 E	1440	S07 E09			57 D	1+	1				2.30		
ALMA-ATA	02	0235	0240	NO FLARE				1							
ZURICH	02	0331	0334 D	PATROL				1		0334		.67		55	
ATHENS	02	0623 E	0637	S06 W01			14 D	1	3	0626		3.00			
ATHENS	02	0636	0643	S05 W01				1	3			.50			
ATHENS	02	0720 E	0745	S05 W01			25 D	1	2			2.70			
BUCHAREST	02	0721 E	0726 D	S07 W01			5 D	1	2			4.10			
ONDREJOV	02	0721	0746	S06 W02			25	1+	3	0723					
CRIMEE	02	0722	0800 D	S06 W00			38 D	1+	2	0728					
CAPRI-F	02	0723 E	0750	S06 E01			27 D	2	1		4.50	5.00			
SCHAUINS	02	0730 E	0805	S05 E01			35 D	1+	1			5.00			
CAPRI-F	02	0930 E	1005	S06 E00			35 D	1+	1			3.50			
UCCLE	02	0935	0957	S07 W01				1	3						
SCHAUINS	02	0940 E	1000 D	S07 W01			20 D	1	2			3.00			
ATHENS	02	1138 E	1150	S06 W01				1	3		.50				
CAPRI-F	02	1138 E	1215	S06 E01			37 D	1	3			3.00			
SCHAUINS	02	1142 E	1148 D	S07 W04				1	2			1.00			
SCHAUINS	02	1243 E	1300 D	S06 W04			17 D	1+	2			5.00			
CAPRI-F	02	1243 E	1305	S06 W04			22 D	1+	3			4.00			
ONDREJOV	02	1245	1307	S06 W06			22	1	2	1248					
SCHAUINS	02	1435 E	1456 D	S06 W05			21 D	1	3			3.00			
ONDREJOV	02	1440 E	1509	S06 W06			29 D	1+	3	1441			2.60		
CAPRI-F	02	1540 E		S07 W04				1				1.50			
CLIMAX	02	1629 E	1707	S12 W05			38 D	1			2.10	2.10			

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				McNATH PLAGE REGION	TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH H ₃₀
CAPRI-F	SEPT 1962														
	02	1632 E	1700 D		S06 W05		6538	1+				3.50			
	03	0145	0200	NO FLARE	PATROL										
	03	0205	0215	NO FLARE	PATROL										
	03	0235	0300	NO FLARE	PATROL										
	03	0342 E	0510 D	U502	S12 E85										
	03	0611 E	0620		N05 E14										
	03	0722	0931		S13 E82		6548								
	03	0726 E	0847		S12 E82		6548								
	03	0910	0934		S12 E81		6548								
TACHKENT	03	0945	1005		S12 E81		6548								
	03	1350 E			S05 W16										
	03	1540	1548		S06 W18		6538								
	03	1600	1610		S06 W18		6538								
	03	1830	1907	1838	N10 W24		6536								
	03	2351	0026 D	2358	S07 W24										
	04	0125	0255	NO FLARE	PATROL										
	04	0249 E	0333		S07 E65		6546								
	04	0351	0413	0356	S07 W25										
	04	0555 E	0615		S06 W25										
BUCHAREST	04	0558 E	0604 D		S07 W26		6538								
	04	0650 E	0730 D	0705	S13 E75										
	04	0718 E	0725 D		S06 W25										
	04	0807 E	0920		S06 W27		6538								
	04	0824	0853		S06 W28		6538								
	04	0824	0858		S07 W28		6538								
	04	0825	0905 D	0829	S07 W28		6538								
	04	0826	0844	0827	S08 W29		6538								
	04	0830 E	0848		S06 W27		6538								
	04	0832 E	0855		S06 W26		6538								
CAPRI-F	04	0959 E			N09 W19										
	04	1108 E			N09 W20										
	04	1237	1249 D		N08 W24										
	04	1239	1306	1243	N09 W24										
	04	1343	1356 D	1350	N09 W26										
	04	1712	1721	1718	N10 E54										
	05	0145	0245	NO FLARE	PATROL										
	05	0813 E			N08 E31										
	05	1245	1323	1250	S08 W43										
	05	1247 E	1318 D		S07 W44		6538								
CAPETOWN	05	1333	1348	1338	N14 E05										
	05	1527	1541	1532	S08 W46										
	05	1707	1724	1712	N10 E33										
	06	1402	1442	1419	N08 E17										
	06	1402	1444	1414	N06 E17										
	06	1404	1435		N03 E17		6546								
	06	1406 E	1425		N09 E16										
	06	1708	1724	1714	N08 W50										
	06	1708	1724	1714	N08 W50										

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT	MER DIST	McMATH PLACE REGION				TIME U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX. WIDTH H _o	
OTTAWA	SEPT 1962													
	06	1708	1724	1715	N12 W52			1-			1.00	1.30		
	07	0145	0300	NO FLARE	PATROL			1-			1.30	1.70		
	07	0949	0954	0952	S07 E37	6547	2	1			1.60	3.00		65
	07	1026	1052		S19 E27	6548	26 D	1	2					
	07	1510	1600	D	S13 E22	6548	30 D	2	1					
	07	1527	1634	E	S14 E26	6548	67 D	2	2			7.00		
	07	1527	1705	D	S14 E26			1-			1.60	1.80		Slow S-SMF
	07	1528	1616	D	S13 E25	6548	50 D	2	1					
	08	0150	0250	NO FLARE	PATROL									
ABASTUMANI ATHENES CAPRI-F	08	0701	0711	0705	S13 E19	6548	10	1	3		.90	1.05		56
	08	0703	0709		S13 E18			1-	2		.70	.80		
	08	0942	0956		S12 E16			1-	2			1.00		
CLIMAX SCHAUINS	09	0220	0240	NO FLARE	PATROL			1-			.40	.70		
	09	1458	1537	1516	N25 E71		30 D	1	2			2.00		
	09	1520	1550	D	N23 E66	6551								
UCCLE UCCLE CLIMAX	10	0135	0145	NO FLARE	PATROL									
	10	0220	0230	NO FLARE	PATROL			1-	3					
	10	0948	0956		S12 W15			1-	3					
	10	1019		2323	N07 W34			1-			.50	.60		
TACHKENT ATHENES	10	2313	2353		N06 W38									
	11	0200	0300	NO FLARE	PATROL									
	11	0244	0447		N22 E83	6553	123 D	1	2		1.55	8.70	2.70	70
	11	0655	0712		N23 E75			1-	3		.50	1.60		
	12	0215	0220	NO FLARE	PATROL									
	12	0240	0245	NO FLARE	PATROL									
ONDREJOV SCHAUINS	12	0255	0320	NO FLARE	PATROL									
	12	1353	1405		N22 E61			1-	3				2.20	
	12	1442	1455	D	S20 W39			1-	2		1.00	1.00		
	12	1530	1558	D	N22 E63	6553	28 D	1+	2		4.00	4.00		
CAPRI-F LOCARNO	13	0922	0929	D	N23 E53			1-	2			1.00		
	13	1012	1059		S16 W12	6554	47 D	1	2		2.00	2.00		
	13	0950	1130	D	S15 W51	6548	100 D	1	2					
	13	1030	1125	D	S13 W53	6548	55 D	1	2		4.00	4.00		
NEW SCHAUIN CAPRI-F	13	1053	1118	D	N23 E49	6553	25 D	1	2					
	13	1053	1135	D	N23 E52	6553	25 D	1	2		3.00	3.00		
	13	1055	1109		N22 E54	6553	42 D	1	2		1.00	1.00		
	13	1240	1310	1247	N22 E50			1-	2		1.20	1.90		
KIEV KO CLIMAX CAPETOWN	13	1240	1310		N24 E51	6553	30 D	1	2					
	13	1356	1400	D	N23 E50	6553	4 D	1	1		1.55	.80		70
	13	1356	1414	D	N23 E51			1-	1		.60	.80		
	13	1358	1414	1402	N22 E50			1-	1		1.00	1.80		
CAPRI-F CLIMAX	13	1400	1410		N22 E47			1-	2			.50		
	13	1440	1446	1442	N22 E53			1-			.20	.20		

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				McMATH PLACE REGION	TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	
CLIMAX CLIMAX	SEPT 1962													
	13	1641	1657	1649	N22 E53			1-			.20			
	13	1659	1732	1705	S10 W12			1-			1.10			
	14	0145	0155	NO FLARE	PATROL									
	14	0205	0300	NO FLARE	PATROL									
	14	0631 E	0645 D		N22 E38			1-			.50			
	14	0642 E	0646 D		N22 E35			1-			.50			
	14	0645 E	0650 D		N23 E38			1-			2.00			
	14	0925 E	0935 D		N22 E38			1-			1.00			
	14	0943	0959	0945	N23 E38			1-		0945	1.30			
	14	0946 E	1002 D		N23 E38	6553		1			4.00			
	14	1010	1048		N20 W37			1-						
	14	1012	1017	1013	N23 E38			1-		1013	1.30			
	14	1048 E	1048 D		N22 E37			1-			.50			
	14	1101	1110		N20 W37			1-						
CAPRI-F ATHENS SCHAUINS CAPRI-F CAPETOWN SCHAUINS UCCLE CAPETOWN UCCLE OTTAWA UCCLE UCCLE LOCARNO UCCLE UCCLE	14	1105	1114	1107	N23 E38			1-			1.30			
	14	1148	1310		N20 W37			1-						
	14	1344	1349 D	1347	N22 E37			1-			.20			
	14	1354	1430		N20 W36			1-						
	14	1440	1501		N20 W36			1-						
	14	1528	1550		N24 E33	6553	22	1						
	14	1532	1610	1538	N22 W36			1-						
	14	1611	1655 D		N22 E03			1-						
	14	1616	1655 D		N22 W35			1-						
	15	0619 E	0755 D	0648	N20 E26			1-			.80			
	15	1047	1100 D		N25 E26			1-						
	15	1138	1210	1141	N22 E22			1-		1141	1.20			
	15	1138	1218	1149	N22 E20			1-		1149		2.50		
	15	1248	1346	1302	N17 E16			1-			1.10			
	15	1250	1335	1258	N22 E23	6553	45	1		1258		2.40		
15	1250	1351	1259	N22 E20	6553	61	1		1259					
15	1255	1330		N22 E21	6553	35	1			2.20				
15	1256 E	1320		N21 E18	6553	24 D	1			4.00				
15	1258 E	1325		N21 E20			1			4.00				
15	1339	1352	1342	N22 E22			1-		1342		1.70			
15	1432	1439 D	1436	N22 E20			1-			1.30				
15	1442 E	1545 D	1504	N22 E22			1-		1436	.10				
15	1449 E	1524		N22 E20	6553	35 D	1+			3.00				
15	1612 E	1630 D		N21 E19			1-			2.00				
15	1615 E	1626		S03 W35			1-			1.00				
TACHKENT BUCHAREST ATHENS ATHENS CAPETOWN BUCHAREST ATHENS NIZMIR	16	0210	0220	NO FLARE	PATROL									
	16	0312	0328 D	0322	N23 E14			1-		0322	2.48	2.70		80
	16	0615 E	0721 D		N22 E14	6553	66 D	1			2.90			
	16	0623 E	0627 D		N21 E15			1-			1.80			
	16	0650 E	0712 D		N21 E15	6553	22 D	1			2.60			
	16	0734	0836	0748	N22 E12	6553	62	1		0748	2.80	3.00		
	16	0736 E	0918 D		N22 E13	6553	102 D	1			3.50			
	16	0743 E	0854 D		N21 E13	6553	71 D	1+			3.50	3.70		
	16	0745	0810	0748	N20 E16	6553	25	1+			2.27			80

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	LAT.	APPROX. MER. DIST.				MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH H ₃₀	
[ONDREJOV UCCLE UCCLE UCCLE UCCLE UCCLE	SEPT 1962											
	23	1015	1050	NO FLARE	PATROL							
	23	1055	1150	NO FLARE	PATROL							
	24	0415	0500	NO FLARE	PATROL							
	24	1040	1105	NO FLARE	PATROL							
	24	1215	1235	NO FLARE	PATROL							
	24	1240	1255	NO FLARE	PATROL							
	24	1302 E	1356 D	N15 W03			1-	1			1.60	
	24	1333	1358	N15 W05			1-	3				
	24	1403	1430	N15 W04			1-	3				
[ABASTUMANI TACHKENT CAPRI-F BUCHAREST CAPETOWN ONDREJOV ABASTUMANI BUCHAREST CAPRI-F CAPETOWN ONDREJOV ZURICH CLIMAX	24	1445	1457	N08 E64			1-	3				
	24	1448	1520	N14 W05			1-	3				
	24	1518	1535	N08 E64			1-	3				
	25	0610 E	0850 D	N13 E56			1+	3	5.22	9.79		65
	25	0619 E	0647 D	N15 E60			1+	1	11.85	22.40	1.90	50
	25	0628 E	0725	N05 E53			2	2		7.00		
	25	0641 E	0903 D	N14 E49			2	2		10.30		
	25	0644 E	0734 D	N12 E53			2	2	4.30	7.00		
	25	0700 E	0844	N13 E48			2	3			2.60	65
	25	0713 E	0750 D	N16 W15			3	3	4.50	4.77		
[CLIMAX	25	0714 E	0741 D	N15 W16			2	2		2.30		
	25	0716 E	0745	N16 W13			1	2		3.00		
	25	0719 E	0734 D	N16 W15			1	1	2.30	2.40		
	25	0719	0748	N15 W15			1	3			2.20	
	25	0734 E	0740	N16 W15			1	2		2.00		
	25	1645	1725	NO FLARE	PATROL				.60	.80		
	25	2207	2230	N20 E58			1-					
	26	0220	0305	NO FLARE	PATROL							
	26	0310	0320	NO FLARE	PATROL							
	26	1645	1720	NO FLARE	PATROL							
[CLIMAX	26	1722	1727	1723	N08 E03		1-		.30	.30		
	26	2015	2025	NO FLARE	PATROL							
	26	2225	2240	NO FLARE	PATROL							
	27	0055	0120	NO FLARE	PATROL							
	27	0245	0320	NO FLARE	PATROL							
	27	0340	0400	NO FLARE	PATROL							
	27	1750	1755	NO FLARE	PATROL							
	27	2045	2110	NO FLARE	PATROL							
	27	2115	2135	NO FLARE	PATROL							
	28	1720	1725	NO FLARE	PATROL							
[CLIMAX	28	1735	1740	NO FLARE	PATROL							
	28	1810	1815	NO FLARE	PATROL							
	28	1830	1915	NO FLARE	PATROL							
	28	2025	2045	NO FLARE	PATROL							
	28	2100	2105	NO FLARE	PATROL							
	28	2115	2150	NO FLARE	PATROL							
	29	1250	1300	NO FLARE	PATROL							

SOLAR FLARES

SEPTEMBER 1962

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION — MINUTES	IM- FOR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX.	MAX. PHASE	McMATH REGION			TIME	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT °
	SEPT 1962								U T				
[VOROSHILOV MITAKA	29	1355	1405	NO FLARE	PATROL								
	30	0015	0021 D				1	2	0018	1.43			68
	30	0016 E	0035				1	1	0016	2.01	4.39	1.64	107
	30	0120	0130	NO FLARE	PATROL								
[SCHAUINS CAPRI-F ONDREJOV	30	0200	0220	NO FLARE	PATROL								
	30	0235	0245	NO FLARE	PATROL								
	30	0250	0440	NO FLARE	PATROL								
	30	0837 E	0843 D				1-	2		1.00			
[CAPRI S CAPRI-F CLIMAX CAPRI-F	30	1034 E	1038				1-	2			1.00	1.90	
	30	1129 E	1136				1-	3	1131			2.60	
	30	1210	1228				1	3	1216	2.00			
	30	1211 E	1228 D				1-	2					
[CAPRI-F	30	1220 E	1227 D				1-	2		1.00			
	30	1553	1613	1600			1-	1		1.00	1.40		
	30	1558 E	1558 D				1	1					

COMMERCE - STANDARDS - SOULDER

These flare reports are addenda to the September 1962 flares published in CREL-F 2188 October 1962.

ATHENS	ATHENS, GREECE	HTE-PROVEN	HAUTE-PROVENCE	NEW SCHAUN	FREIBURG, GFR
BAKOU	PIRCULI, USSR	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
CAPETOWN	ROYAL OBSERVATORY,	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPRI F	CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNAVA PAKHRA, USSR
CAPRI S	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CRINEE	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJOBADEN	STOCKHOLM, SWEDEN
HERSTMONCEU	SIMEIZ, USSR	MCWATH	MCWATH-HULBERT	SCHAUNINS	SCHAUNISLAND, GFR
	ROYAL GREENWICH OBSERVATORY,	MOSCOW	PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
	HERSTMONCEUX, ENGLAND		MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

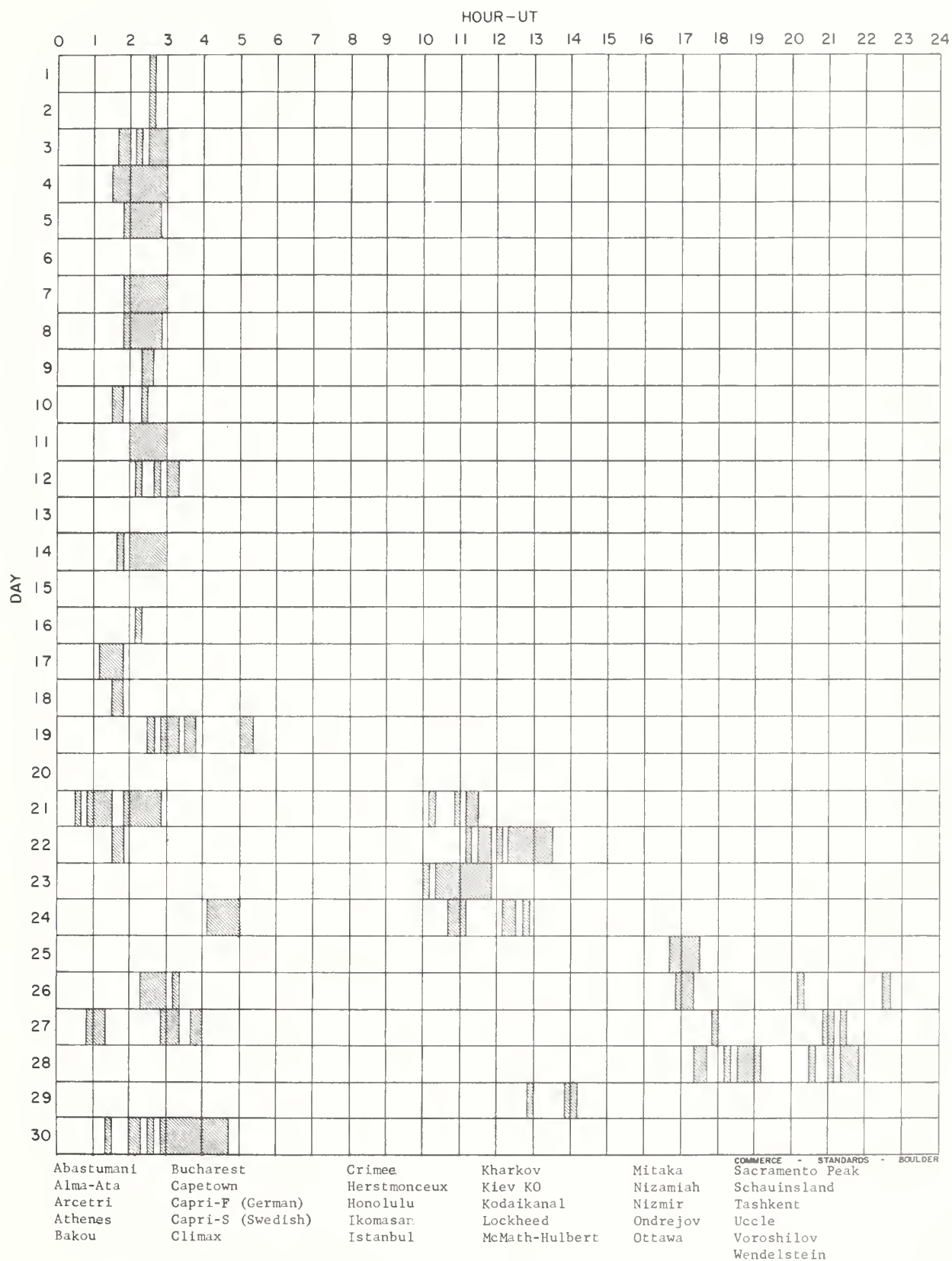
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

III m

SEPTEMBER 1962



IONOSPHERIC EFFECTS OF SOLAR FLARES

SHORT WAVE RADIO FADEOUTS
 SUDDEN COSMIC NOISE ABSORPTION
 SUDDEN ENHANCEMENTS OF ATMOSPHERICS
 SUDDEN PHASE ANOMALIES
 SOLAR NOISE BURSTS AT 18 Mc

NOVEMBER 1962

NOVEMBER 1962	UNIVERSAL TIME			SWF TYPE	IMPORTANCE						WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		IMP	ABS	SCNA	SEA	SPA	BUR			
13	2350	2353								1	5	HA MA	
14	0048	0053								1	5	HA MA	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVa

DECEMBER 1962

ARO - OTTAWA

2800 Mc.

Dec. 1962	Type	Start UT	Duration Hrs:Mins	Maximum			Remarks
				Time UT	Peak Flux	Mean Flux	
17	2 Simple 2 4 Post Increase	1625.5	6.5 31	1630.5	40 2	13 1	
18	3 Simple 3 A 6 Complex f 6 Complex f	1853 1855 1905	>1 07 3.5 12	2000 1855.3 1909	4 6 11	- 3 8	
21	1 Simple 1	1522	6	1524.5	4	2	
23	3 Simple 3 f	1705	>3 05	1910	6	-	

HOURS OF OBSERVATION: OCTOBER, NOVEMBER, DECEMBER 1962

COMMERCE - STANDARDS - BOULDER

OBSERVING PERIOD:

October 12:00 UT - 22:00 UT (approx)
November 12:30 UT - 21:30 UT (approx)
December 13:20 UT - 21:05 UT (approx)

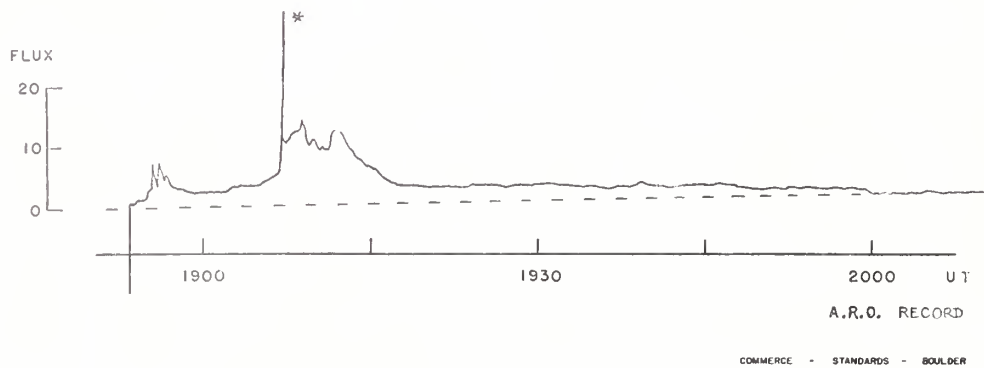
With the following exceptions:

- (1) Observations ended: November 21 at 20:15 UT
- (2) Interruptions for calibrations purposes of approximately 20 minutes of observation, usually in the period 16:00 UT to 17:00 UT for the following days:

October - 18
November - 1
2
15
December - 7
18

SELECTED 2800 MC/S SOLAR NOISE BURSTS
OTTAWA, CANADA

DECEMBER 18, 1962



* SPIKE ALSO PRESENT ON RECORD OF BURST TAKEN AT
GOTH HILL OBSERVATORY (150 MILES FROM A. R. O.)

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

IVc

BOEING - SEATTLE

APRIL — DECEMBER 1962

221 Mc.

1962	Type	Start U. T.	Time of Maximum U. T.	Duration Minutes	Flux Peak $10^{-22} \text{w/m}^2/\text{Hz}$	Density Mean Hz/Hz^2
Apr 2 9	a	1910	1910.5	2	440	80
	a	2233	2233.5	1	75	15
	f	0007	0017	10	230	45
	c	0131	0131.5	3	80	15
	c	2138	2140	4	45	10
	c	2144	2146.5	1	45	10
	a	2148	2210	27	13000	1300
	a	2258	2258.1	5	50	10
	a	2011	2011.2	1	70	15
	f	2026	2025.5	4	90	15
17 18	a	1523	1524.2	4	125	25
	f	1800	1817.3	100	310	50
	a	2221	2222	1.5	70	15
	f	2324	2325	2	145	25
	f	2339.5	2340.5	11	100	20
	C	2000	2005.8	10	4900	545
	a	0203.5	0204	1	110	20
	c	1919.5	1920.2	3.5	840	90
	c	2008	2009	3	50	10
	ec	2241	2241	1	90	15
22	a	0034.5	0035.2	1.5	40	10
	c	1551	1552.5	2	130	25
	a	1719	1719.5	1.5	75	15
	f	1726	1726.5	2.5	45	10
	a	2242	2242.4	1	600	65
	a	2051.5	2052	1	40	10
	a	2204	2205	2	75	15
	f	0043	0045.5	3	150	30
	f	2228	2229.5	2	65	15
	a	1935	1935.5	1	130	25
30	f	1938	1939.5	3	60	15
	a	2312	2312.2	2	170	25
	f	0010	0011	2	90	20
	c	1918	1918.5	10	270	50
	a	0016	0017.2	1	160	25
	a	2347	2347.5	1	150	25
	a	2349.5	2349.8	1	170	30
	a	0121	0121.2	5	90	15
	a	0125	0125.6	1	75	15
	a	0158	0158.5	1	130	25
11	a	1613	1614.2	1.5	150	25
	a	1620	1621	2	600	80
	a	1852	1852.2	1	130	25
	a	2109	2109.8	2	110	20
	f	1532	1535.2	6	550	80
	f	1853	1854	2	55	15
	c	1750	1752	3	70	15
	c	2112	2113.5	2	160	27
	c	1800.5	1801	1	60	15
	c	1913	1913.6	1	70	15
24	a	1517	1517.2	2	150	30
	f	0320	0320.5	4	40	10
	a	2326.5	2327	1	40	10
	a	2351.5	2352.3	2.3	75	15
	f	2352	2352.5	1	45	10
	f	1743	1744	1.5	45	10
	c	2038	2038.7	1	50	10
	c	2040	2040.8	3	110	20
	c	2043	2043.5	1	50	10
	f	2133	2138.7	6	60	15
28	c	0255	0255.5	1	50	10

1962	Type	Start U. T.	Time of Maximum U. T.	Duration Minutes	Flux Peak $10^{-22} \text{w/m}^2/\text{Hz}$	Density Mean Hz/Hz^2
Jul 2	c	1851	1853	4	45	10
	ec	2047	2047.5	1	46	12
	ec	2325.5	2325.6	1	35	10
	ec	2219	2220	2	40	10
	ea	2323	2323.8	1	36	10
	c	2248	2248.8	2	30	8
	f	1651	1651.3	1	120	25
	c	1857.2	1858	2	285	50
	c	1734	1735	5	120	45
	a	1718.5	1719.2	1.5	35	10
22	a	2229	2230	2	250	45
	a	2245.5	2246	2	40	10
	a	1701.4	1702	2	60	10
	c	0115	0150.8	45	70	16
	a	2125	2125.8	1.5	102	22
	f	2008	2008.5	1	35	10
	c	2314.7	2316.3	1.6	> 80	20
	c	2316.7	2317	1	> 80	20
	c	2318.3	2318.7	1.5	> 80	20
	a	1702.4	1702.6	5	211	40
13	a	1847.5	1847.8	1	39	10
	a	1725.6	1726.0	5	57	14
	a	1701.3	1701.3	8	58	14
	a	1930.5	1930.7	5	47	12
	a	2012.8	2013	.6	47	12
	a	2248	2248.4	8	28	8
	a	2301	2302.5	3	2850	350
	a	1643	1643	.5	86	19
	RF	1645	1656	108	62	5.7
	a	1836.9	1838.2	3.9	87	23
27	a	1840.8	1841.3	1.5	567	90
	c	1743.7	1746.7	3.2	1140	160
	c	1706.3	1707.6	3	29	8
	ec	1802.0	1803.0	2.5	100	22
	c	1918.0	1920.3	3.3	92	15
	a	2353.8	2354.5	2.8	55	13
	ea	1842	1842.3	3	59	14
	f	1712	1713	16	82	19
	c	1937	1937.2	1.5	> 85	19
	ea	1958	1958.5	1	46.5	12
24	ea	2122	2122.8	1	31.5	8.6
	RF	1905	1939	78	42.2	9
	ea	1740	1740.5	1	66.5	11

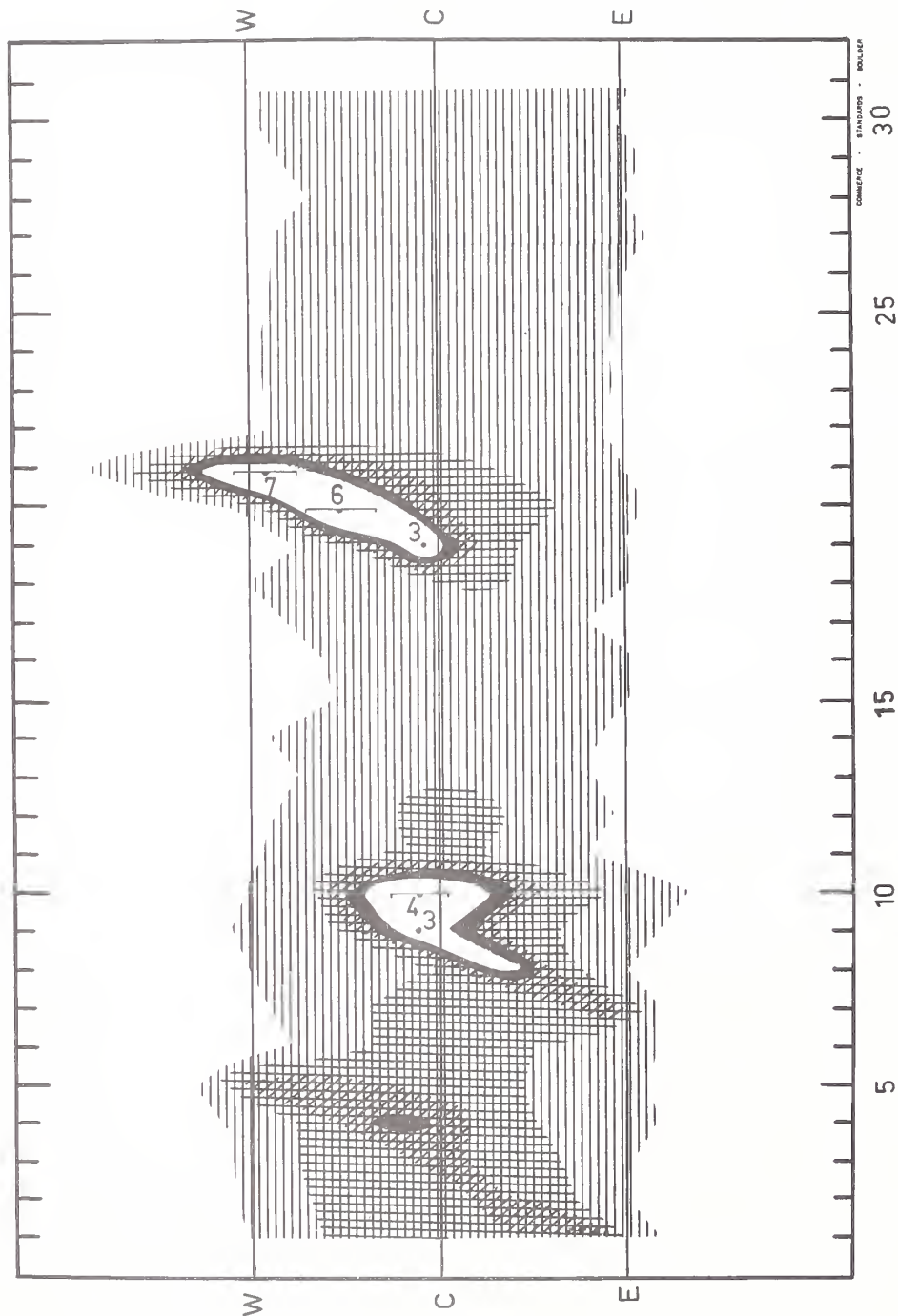
COMM-FICE 8 THEIAHUR 804-202

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

DECEMBER 1962

169 Mc.

NANÇAY



DECEMBER 1962

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVc

DECEMBER 1962

BOULDER

108 Mc.

Dec. 1962	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
6	3	2008.3	2009.0	2.0	3

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION OUTSTANDING OCCURRENCES

DECEMBER 1962

BOULDER

108 Mc.

Dec. 1962	U.T.	Dec. 1962	U.T.
1	1407-2320	18	1450-2322
2	1408-2320	19	1422-2322
3	1409-2320	20	1423-2322
4	1410-2320		
5	1411-2320	21	1950-2323
		22	1423-2323
6	1412-2320	23	1424-2324
7	1413-2320	24	1425-2151
8	1414-2320	25	1425-2325
9	1415-2320		
10	1416-2215	26	1425-1550; 1630-2326
11	1417-2320	27	1426-2326
12	1417-2320	28	1426-2327
13	1418-2000	29	1426-2328
	2139-2320	30	1427-2045; 2215-2329
14	1419-2320		
15	- -		
16	- -	31	1427-1614; 1637-2143; 2152-2329
17	1832-2321		

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

DECEMBER 1962

HAO BOULDER

7.6 - 41 Mc.

Date	Bursts			Frequency Range (mc)	Date	Bursts			Frequency Range (mc)
1962	Type	Time (U.T.)	Inten- sity		1962	Type	Time (U.T.)	Inten- sity	
2 Dec	III	1618.45-1619.15	1-	24-36	22 Dec	III	1848.30-1848.45	1-	22-40
3	III	1901.45-1902.15	1-	22-29		III	1849-1849.30	1-	22-40
	III	2110.45-2111.15	1	24-34		III	1849.45-1851.45	1	16-40
4	III	2225.30-2225.45	1	24-41		III	2039.15-2040	1	22-40
5	III	1747.45-1748.30	1	16-41		III	2040.45-2041	1-	23-40
6	III	1429.30-1430	1-	25-41		III	2057.30-2057.45	1	25-40
	III	1432-1433.30	1-	22-41		III	2059.30-2100	1	24-40
	III	1433.15-1434	1	33-41		III	2103.45-2104.30	1+	20-40
	III	1623.30-1624	1-	23-34		III	2115.15-2115.45	1+	17-40
	III	1842.45-1843.15	1-	24-36		III	2217.45-2218.30	1	21-40
	III	1845-1845.30	1-	23-41	23	III	1428-1428.15	1-	22-40
	III	1942-1942.15	1-	24-41		III	1433-1433.30	1	24-30
	III	2103-2103.15	1-	23-36		III	1434.15-1434.45	1	22-40
7	III	2004.15-2005	1	23-35		III	2052.30-2052.45	1-	29-40
	III	2005.30-2005.45	2	23-41	24	III	1428-1428.30	1-	23-40
8	III	2221-2221.15	1-	28-41		III	1443-1443.15	1-	21-40
11	III	1757.30-1758	1-	32-41		III	1538.45-1539.15	1-	30-40
15	III	1535.45-1536.45	1-	29-41		III	1607.30-1610	1	30-40
18	III	1841.15-1841.30	1-	26-38		III	1753.30-1753.45	1-	22-40
	III	1940.15-1900.30	1-	21-39		III	1754.15-1754.30	1-	22-40
	III	1905-1905.15	1-	16-32		III	1804.30-1804.45	1-	25-40
	III	1908-1908.30	1-	16-27		continuum	1827-1836	1-	21-40
	III	1908.45-1910	1	16-41		III	1833-1834.30	1	16-40
	III	1910-1910.30	1	16-41	25	III	1443.15-1443.30	1-	28-41
	continuum	1915-2050	1-	26-41		III	1502.15-1502.30	1-	23-35
	continuum	2115-2225	1-	26-41		III	1517-1517.30	1	33-41
19	III	2015-2015.30	1	21-41		III	1534.15-1535	1	23-41
20	III	1738.45-1739.15	1	21-41		III	1538-1538.30	1	29-38
	III	1740.15-1742	2+	10-41		III	1912.15-1912.45	1-	28-41
	III	2125.15-2125.45	1+	21-41		III	1920-1920.15	1-	23-39
	III	2125.45-2126.15	1	27-41		III	1936.15-1937.15	1	15-41
	III	2126.30-2128.15	1+	21-41		III	2005-2005.45	1	22-41
	III	2128.15-2129	1	23-41	27	III	1820.30-1821	1	32-41
21	III	1911.30-1912	1	20-40		III	1920.30-1921.15	1	22-41
22	III	1712.15-1713	1	16-40	29	III	2144-2144.45	1-	21-41
	III	1740.30-1750	1	16-40					

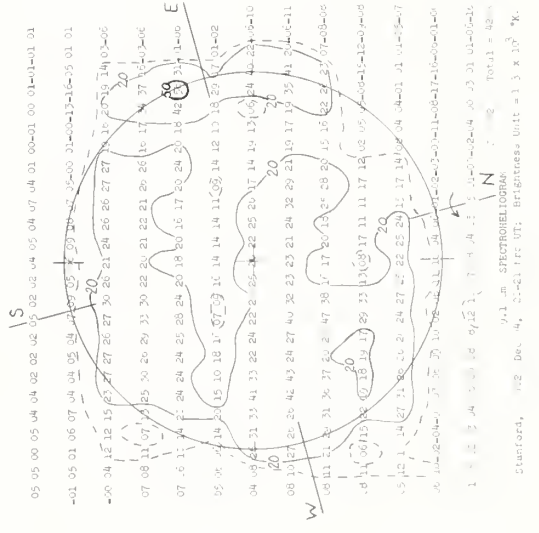
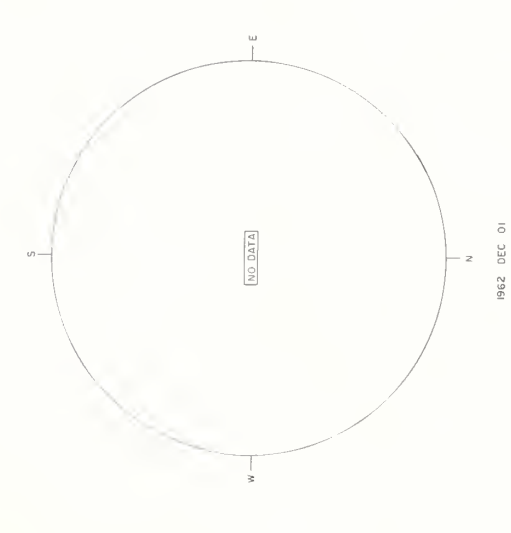
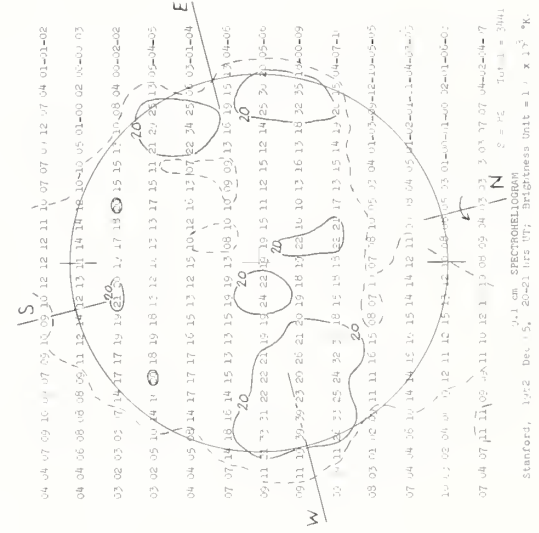
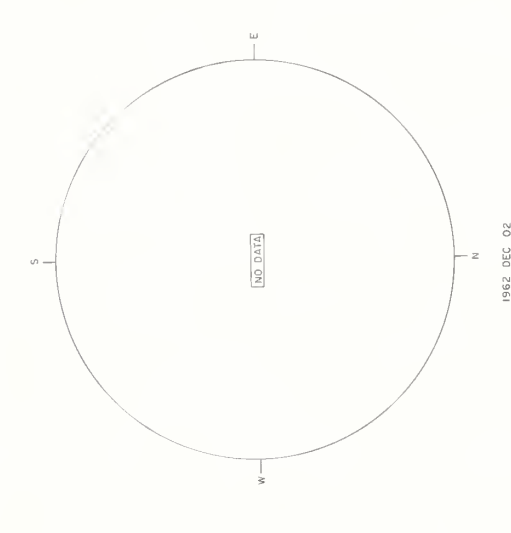
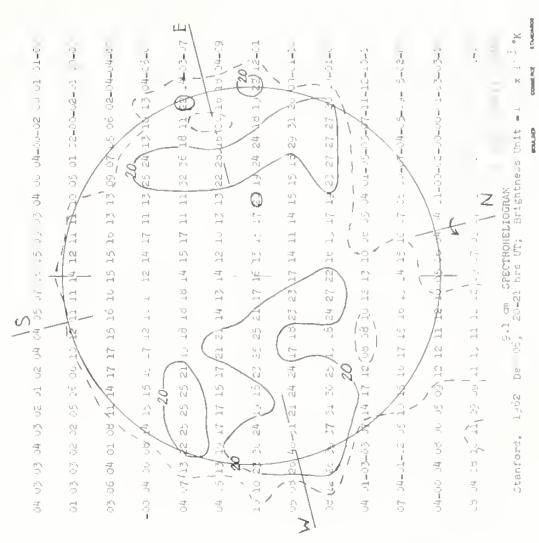
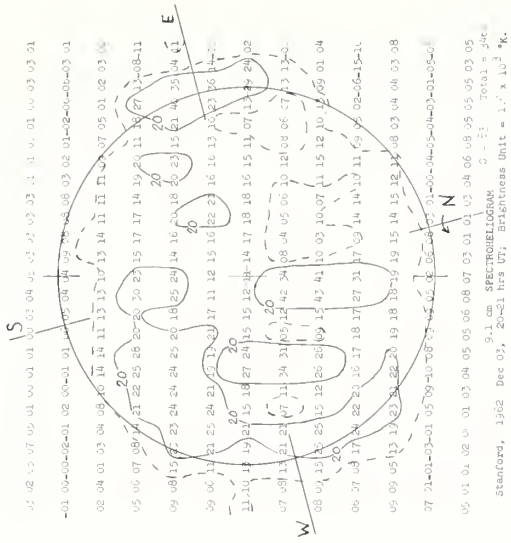
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1962

STANFORD

9.1 cm



SOLAR RADIO EMISSION SPECTROHELIOGRAMS

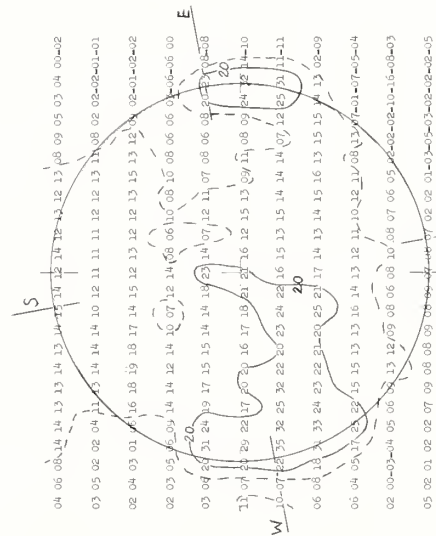
DECEMBER 1962

STANFORD

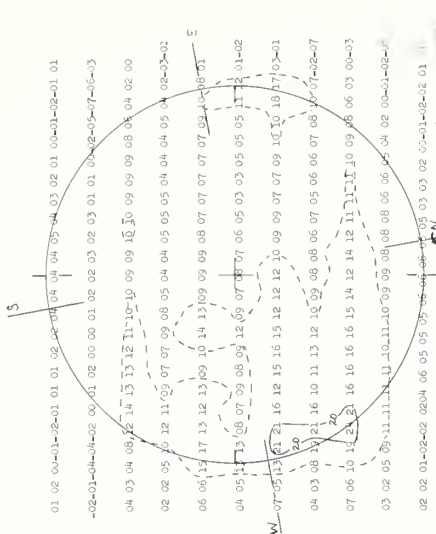
9.1 cm



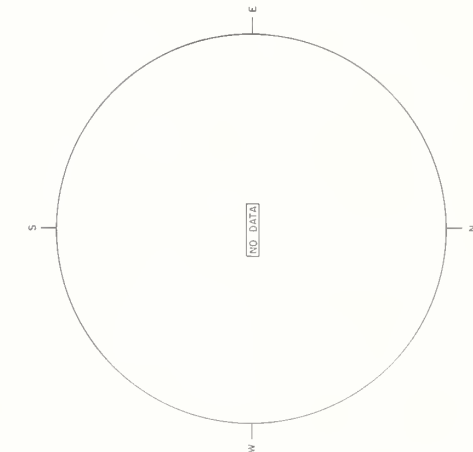
Stanford, 1962 Dec 13, 20:21 hrs UT, Brightness Unit = 1.9×10^3 *K.



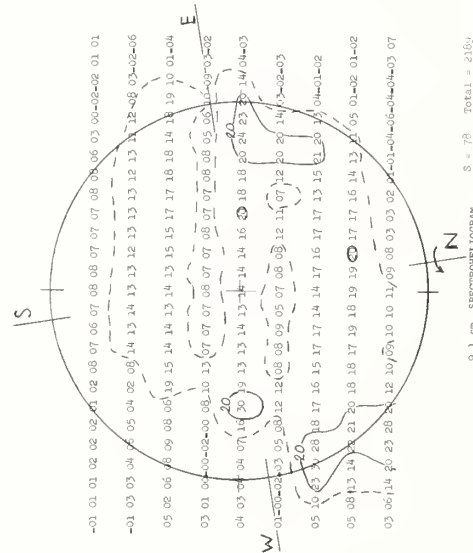
Stanford, 1962 Dec 14, 20:21 hrs UT, Brightness Unit = 1.7×10^3 *K.



Stanford, 1962 Dec 15, 20:21 hrs UT, Brightness Unit = 2.9×10^3 *K.



1962 DEC 16



Stanford, 1962 Dec 17, 20:21 hrs UT, Brightness Unit = 2.3×10^3 *K.

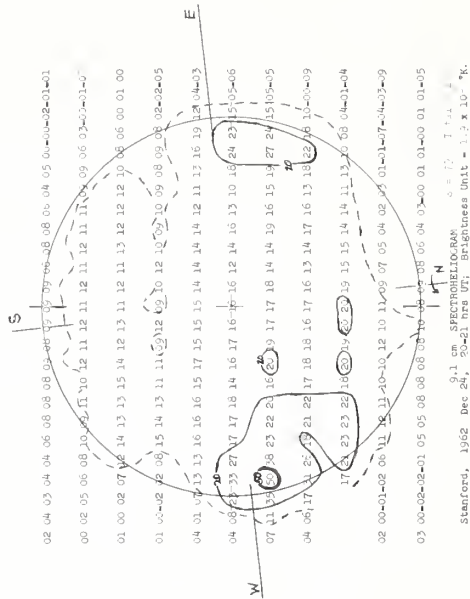
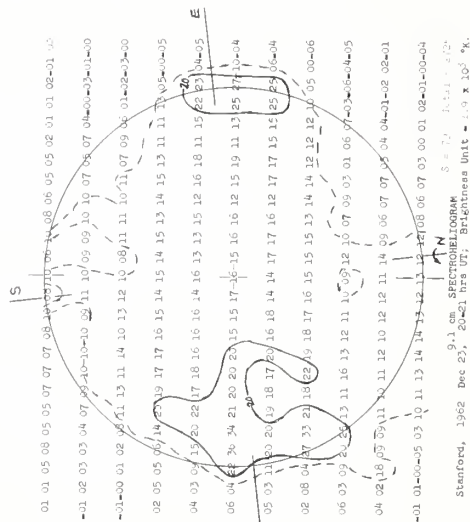
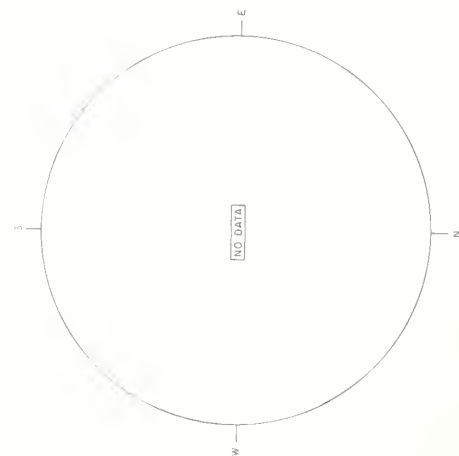
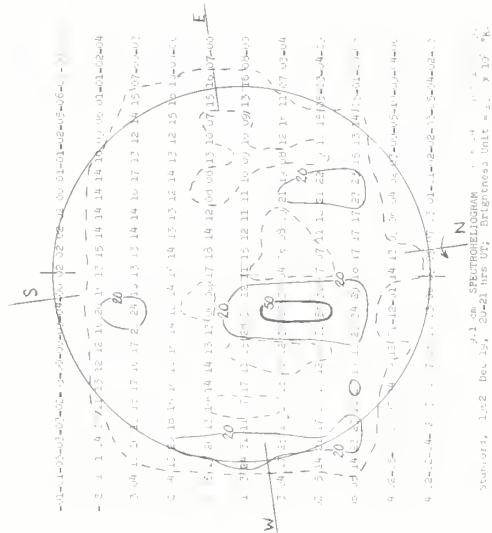


Stanford, 1962 Dec 18, 20:21 hrs UT, Brightness Unit = 2.1×10^3 *K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1962

STANFORD

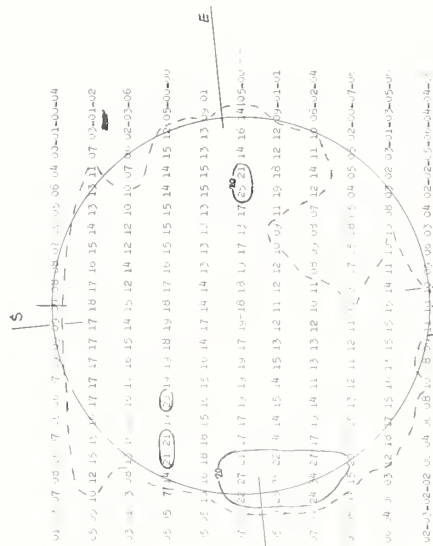


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

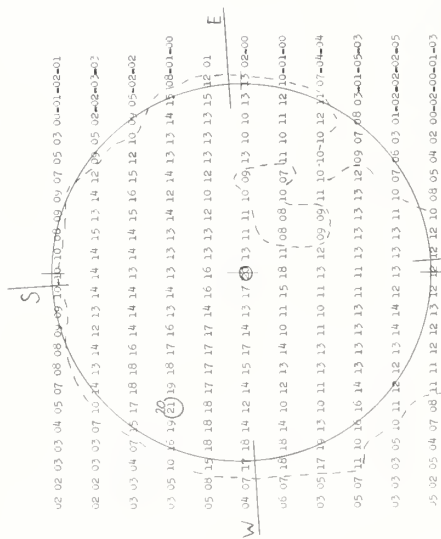
DECEMBER 1962

STANFORD

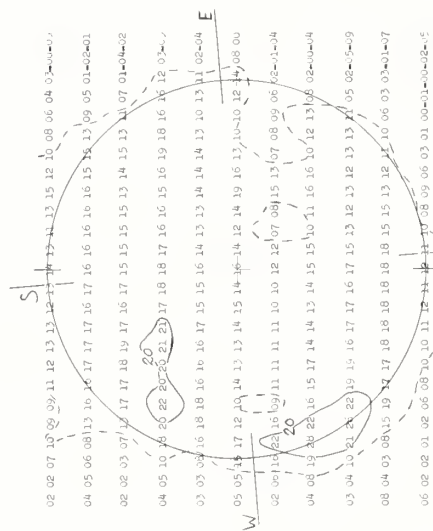
9.1 cm



4.1 cm SPECTROHELIOGRAM
Stanford, 1962 Dec 25, 20-21 hrs UT: Brightness Unit $\times 10^{-4}$ K.

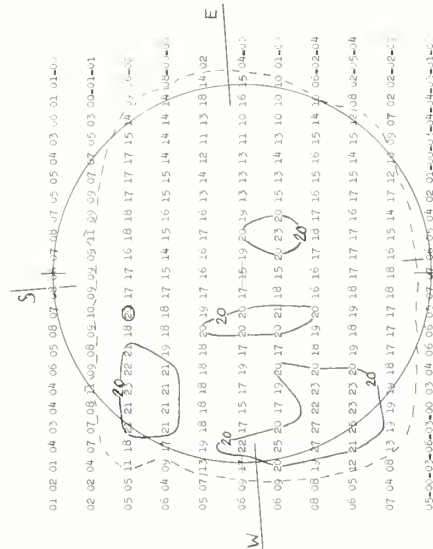


Stanford, 1962
Dec 20, 20-21 hrs UT; Brightness Unit = $10^{-11} \times 10^{-6} \text{ W m}^{-2} \text{ nm}^{-1}$
9.1 cm SPECTROHELIOGRAM

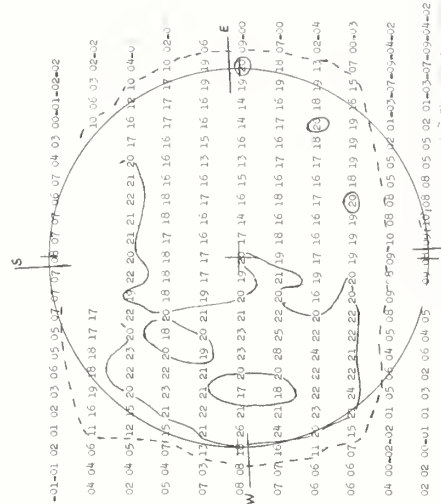


9.1 cm SPECTROHELIOGRAM
Stanford, 1962 Dec 26, 20-21 hrs UT; Brightness Unit = $10^{-11} \times 10^{-4} \text{ } ^\circ\text{K}$.

1962 DEC 29



9.1 cm SPECTROHELIOGRAM
Dec 27 20:21 hrs UT. Brightness Unit = 10⁻¹⁴ w

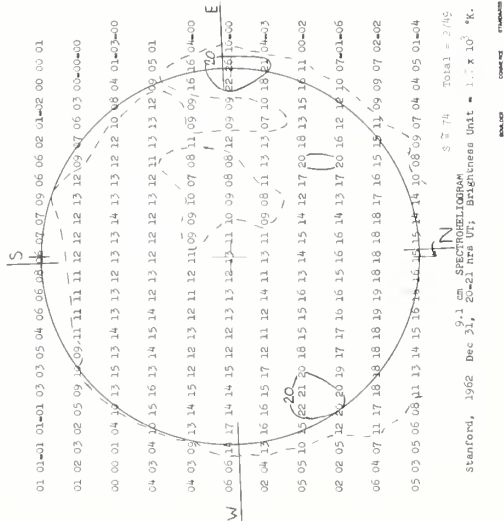


Stanford, 1962 Dec 30, 60-21 hrs UT; Brightness Unit = 1×10^{-4} °K,

SOLAR RADIO EMISSION SPECTROHELIOGRAMS
DECEMBER 1962

9.1 cm

STANFORD



COSMIC RAY INDICES

(Climax Neutron Monitor)

IGC STATION B 305

NOVEMBER 1962

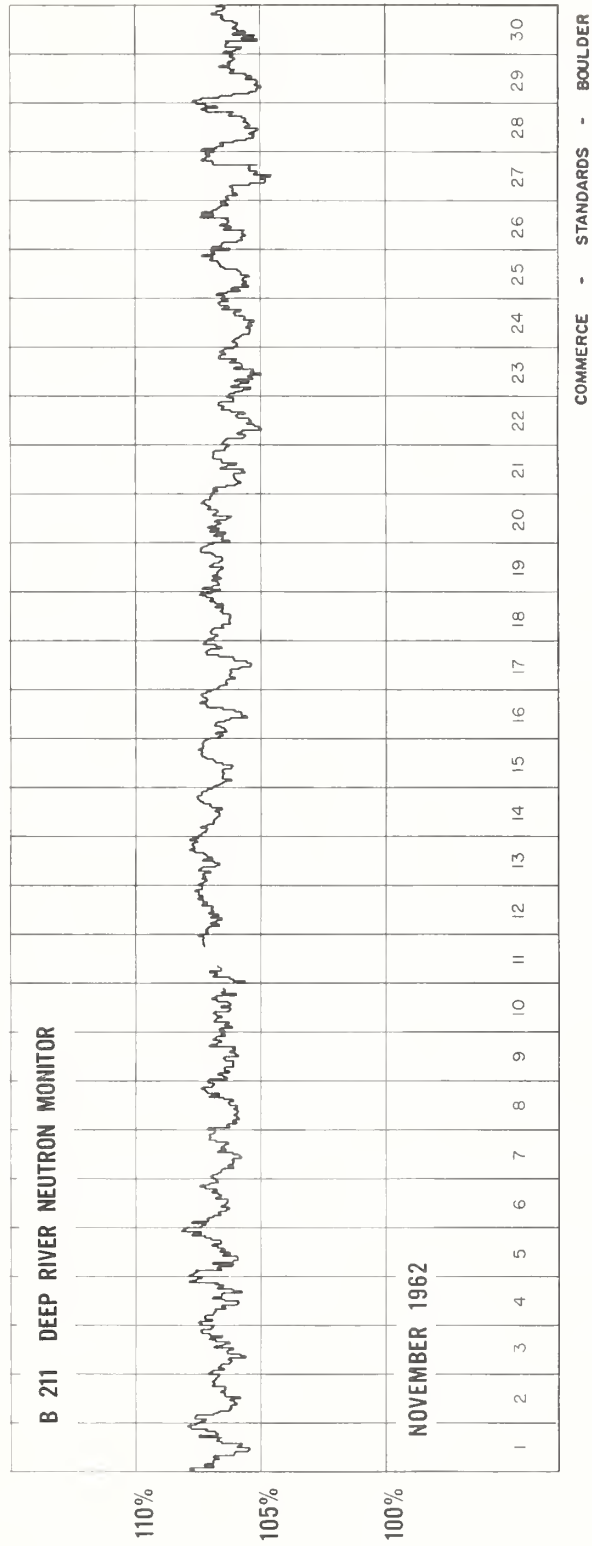
Nov. 1962	Daily average counts/hr*	Nov. 1962	Daily average counts/hr*
1	3102.6	16	3112.1
2	3108.1	17	3104.1
3	3103.6	18	3111.6
4	3108.3	19	3113.8
5	3112.6 +28	20	3089.7
6	3108.8	21	3085.9
7	3101.9	22	3079.1
8	3097.2	23	3078.5
9	3099.8	24	3072.8
10	3104.2	25	3077.8
11	3099.1	26	3082.3
12	3101.3	27	3082.5
13	3106.1	28	3079.9
14	3099.6	29	3080.6
15	3109.6	30	3100.4

COMMERCE - STANDARDS - BOULDER

*Scaling Factor 128

+Number of Section Hours

COSMIC RAY INDICES
(Pressure Corrected Hourly Totals)



GEOMAGNETIC ACTIVITY INDICES

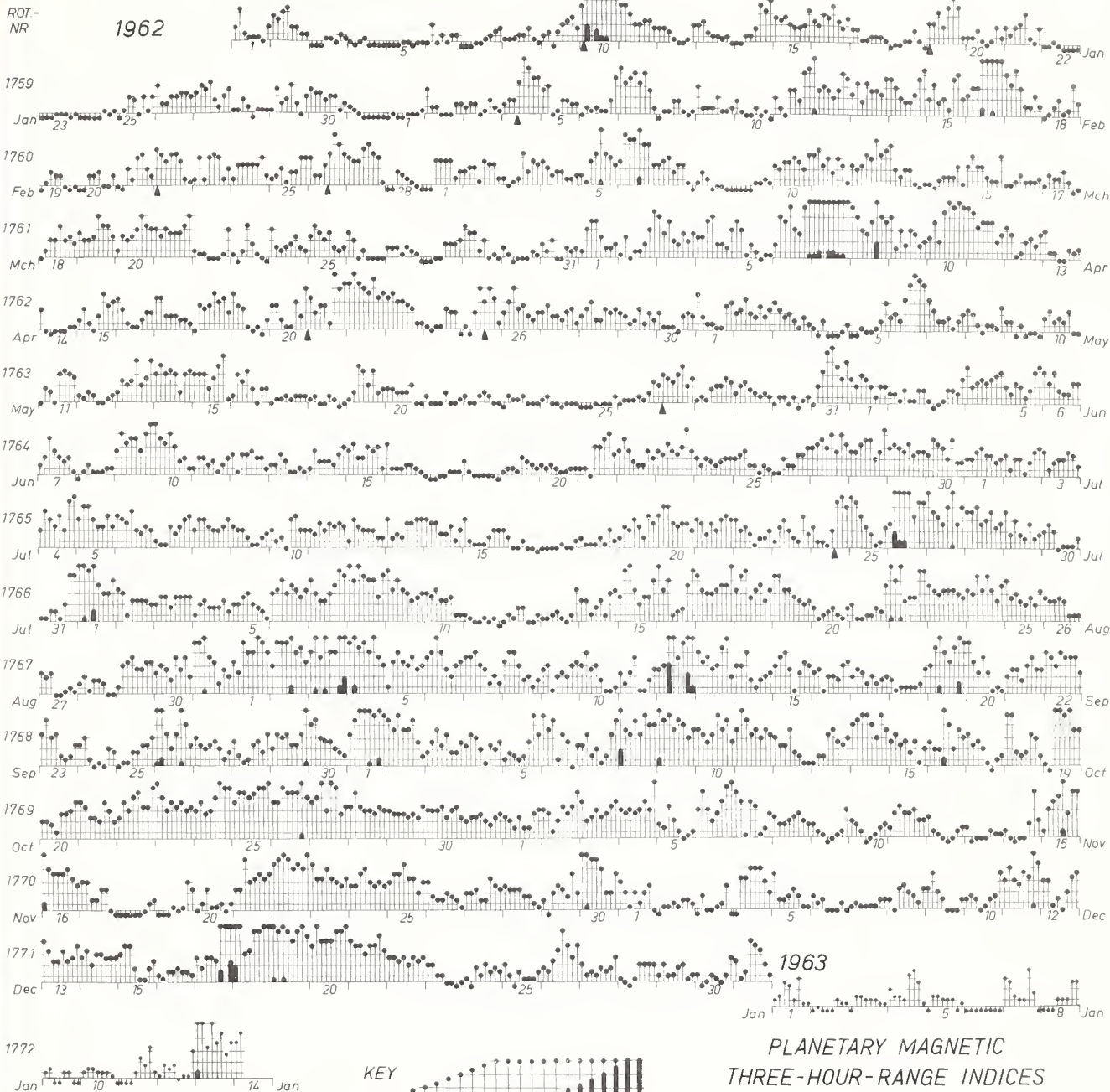
NOVEMBER 1962

Nov. 1962	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	0.5	2+	2o	1+	2+	1+	1+	3-	3o	16+	8	Five Quiet
2	0.9	3o	3-	1o	2o	3+	3-	3+	4+	22+	15	
3	0.8	4-	2o	2+	3o	2+	3-	3+	4-	23o	14	
4	1.0	3o	3-	3o	3-	3o	4-	3o	5o	26o	19	
5	0.1	2-	1+	3+	2o	1o	0+	1-	1o	11+	6	
6	1.2	3o	4+	3o	2o	3-	4-	5-	5o	28+	24	18
7	0.8	4+	4-	1-	4-	3+	1-	1+	3-	20+	15	20
8	0.5	2+	2-	2-	2o	2+	3-	2o	2-	16+	8	
9	0.3	2-	1o	1-	0o	0+	1-	1o	3o	8+	5	
10	0.1	2o	2-	1o	0o	0+	1-	1+	2-	9-	4	
11	0.8	1+	3-	3+	3-	3-	3o	2o	2o	20-	11	Five Disturbed
12	0.1	2+	1o	1-	0+	0o	0+	1o	1+	7o	4	
13	0.0	1+	0o	0+	0+	0+	1o	1-	1-	5-	3	
14	0.6	1o	0+	0o	0+	0+	2-	4+	2o	10o	7	
15	1.3	1o	3o	4-	4o	6-	3-	4+	4+	29-	26	
16	1.2	6-	4o	4-	4-	4-	4o	3+	3-	31-	27	22
17	0.4	3o	3o	1+	1+	2+	2+	0+	0o	14-	8	30
18	0.1	0o	0o	0o	0o	0o	0+	1o	1+	3-	1	
19	0.2	0o	0o	0o	1-	0+	1-	3o	2+	7o	4	
20	0.1	0+	1o	2+	1-	1-	1o	0+	1o	7+	4	
21	1.2	2+	2+	5-	3o	3+	4-	3+	4-	26+	19	Ten Quiet
22	1.4	4+	5-	5o	5-	4o	4+	4o	5o	36o	35	
23	1.0	4+	3+	3+	4o	3+	3o	3-	3+	27+	20	
24	0.9	3-	3-	4-	4o	3o	3-	3o	3-	24+	16	
25	0.9	3o	4-	4-	4+	3+	3+	2o	3o	26+	19	
26	0.2	3o	2-	1+	1+	2o	2-	1+	1-	13o	6	12
27	0.5	2o	2o	2+	1+	1+	3+	3-	2+	17+	9	13
28	0.2	3-	2+	2+	2+	2-	2-	1o	1-	15-	7	14
29	0.7	1+	0o	2o	3-	2+	2-	4-	2o	16-	8	18
30	1.2	5o	5+	5-	5-	4o	2o	2o	4-	31+	32	19
												20
												26
Mean:	0.64									Mean:	13	

COMMERCE - STANDARDS - BOULDER

DAYS IN SOLAR ROTATION INTERVAL

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27



BOULDER

COMMERCE - STANDARDS

JB

NORTH PACIFIC

[illegible]

() Represent disturbed values
All times are Universal Time (U.T.)

COMMERCE - STANDARDS - BOULDER

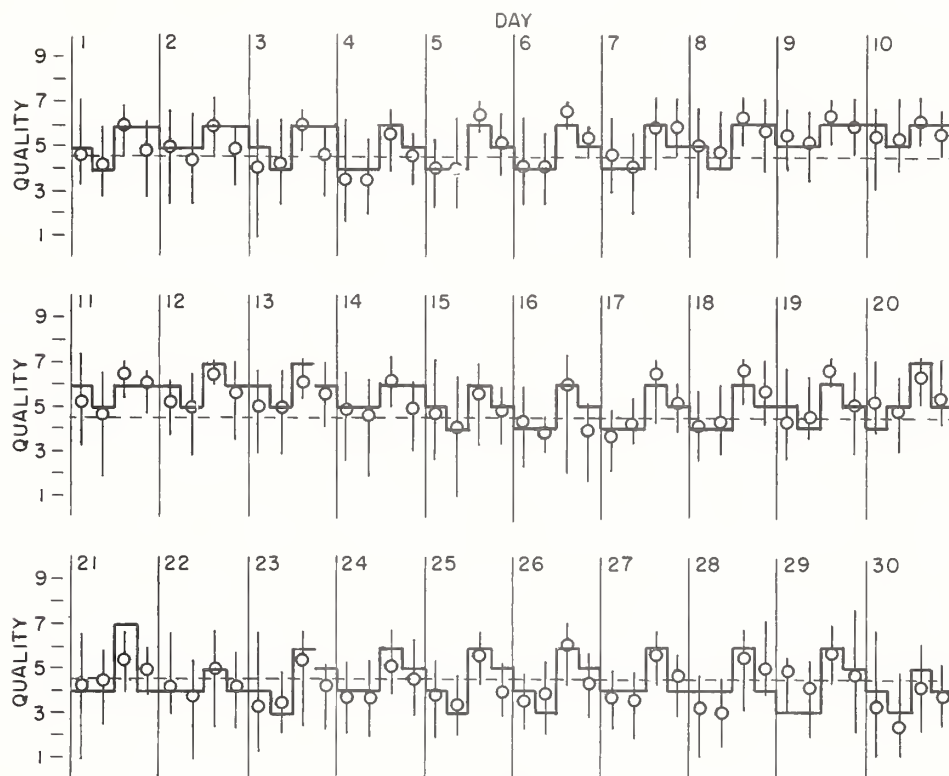
NORTH ATLANTIC

NOVEMBER 1962

— Short-term forecast

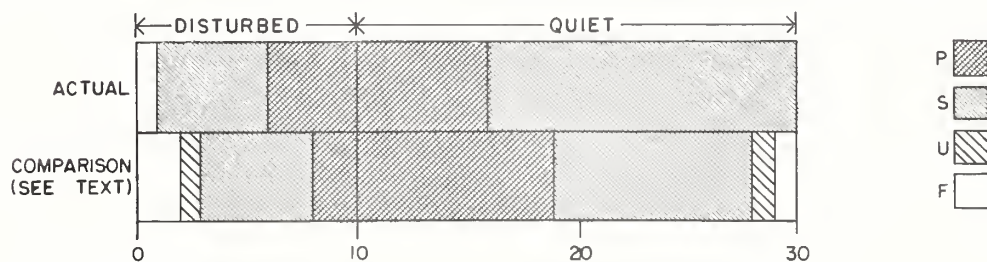
| Range of reports

o Quality figure

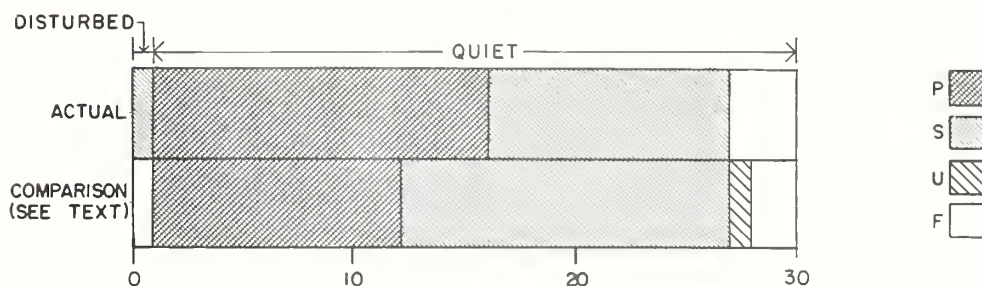


Outcome of advance forecasts--final estimates (1 to 7 days ahead)

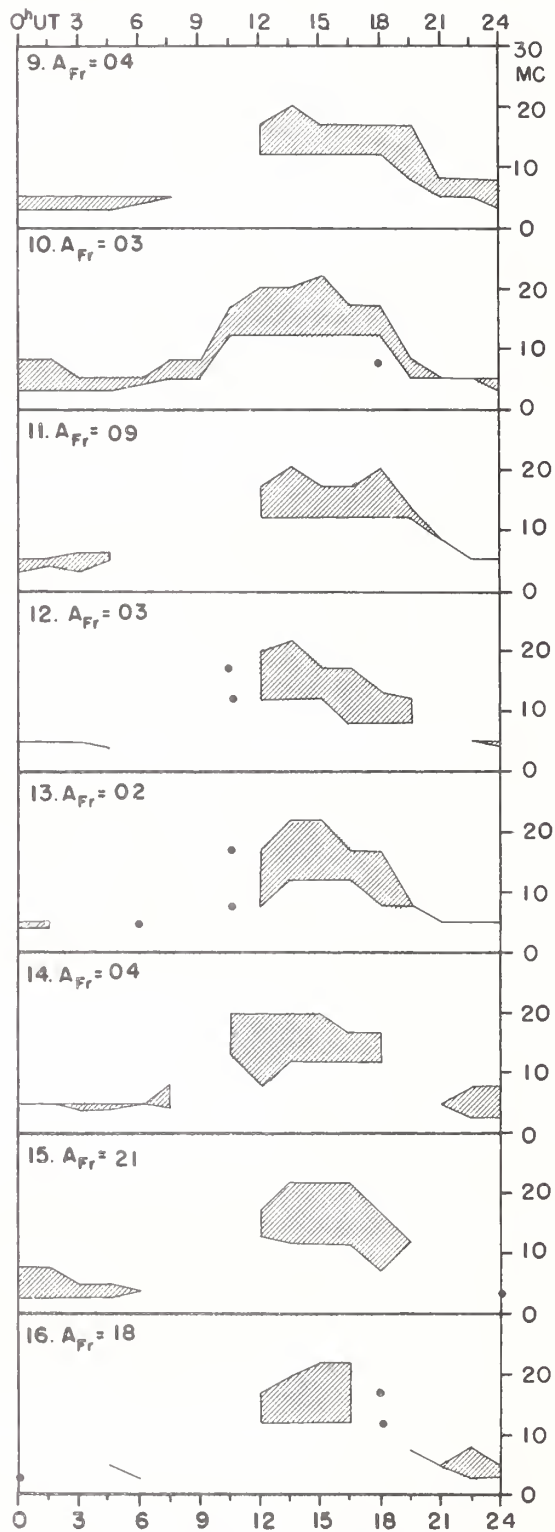
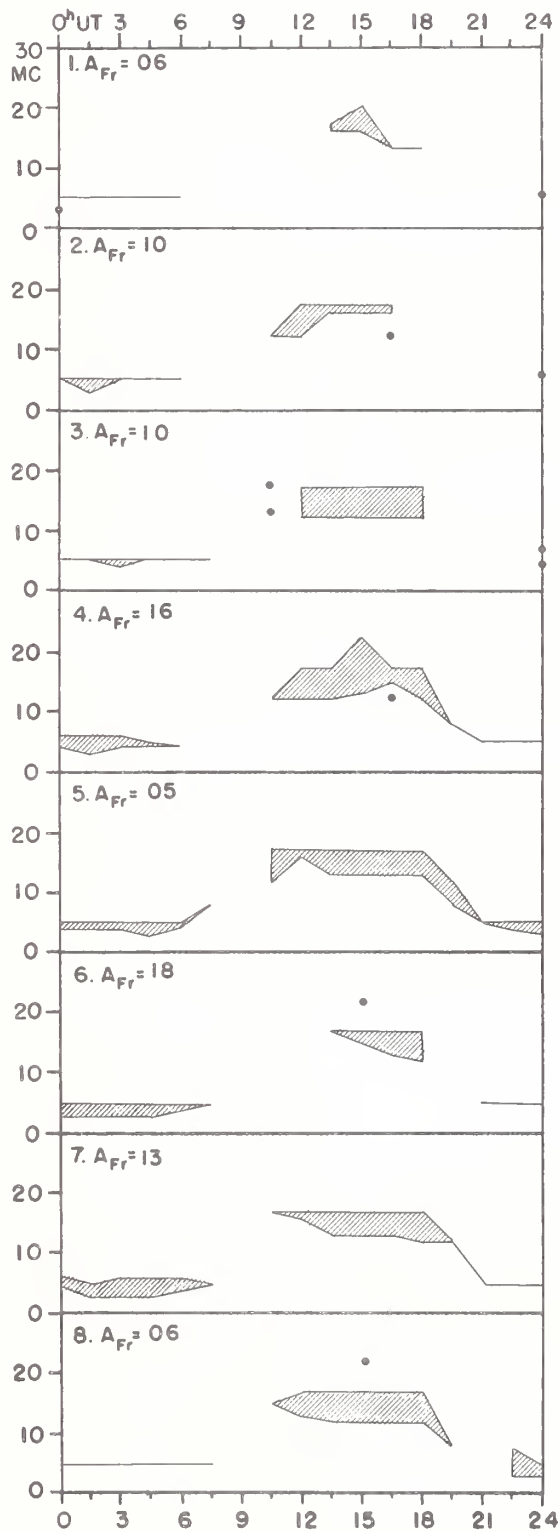
NORTH ATLANTIC



NORTH PACIFIC

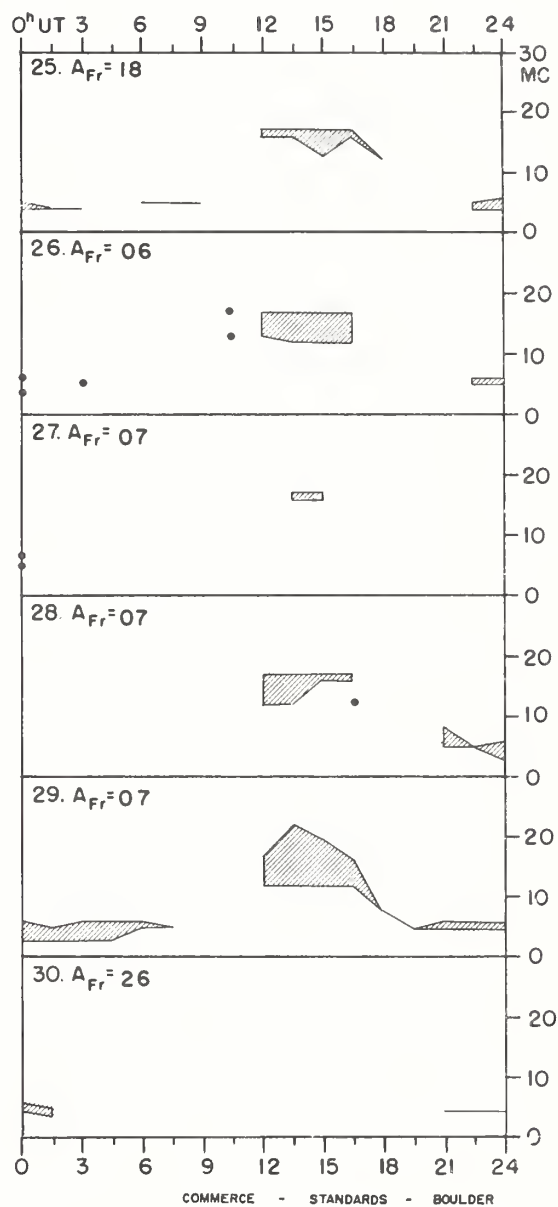
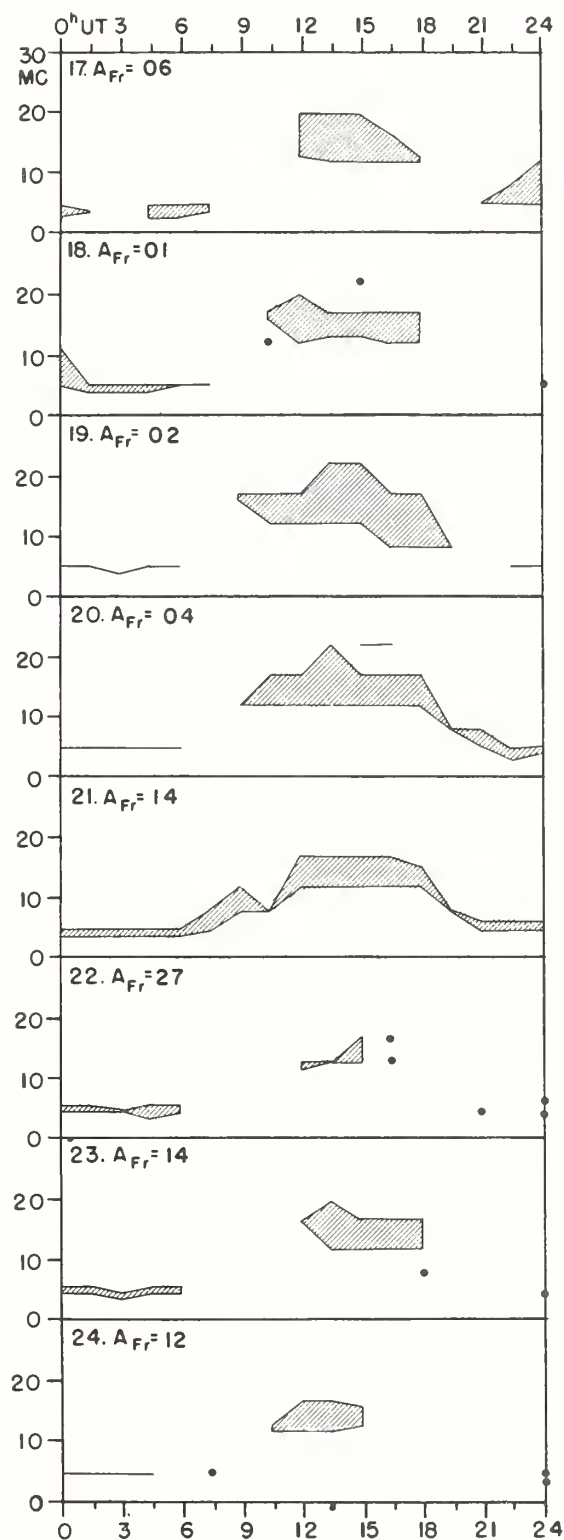


NOVEMBER 1962



COMMERCE - STANDARDS - BOULDER

NOVEMBER 1962



Adapted from Observations by Deutsches Bundespost

ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

DECEMBER 1962

Issued December 1962 Day/Time U.T.	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Intervals
17/2330	Ft. Belvoir, Magnetic Storm 17/15XXZ			
18/1600		186	Magnetic Storm 17/15XXZ	Start
19/1600		187		Continue
20/1600		188		Continue
21/1600		189		Finish
26/1600		190	Magnetic Storm 26/0800Z*	

COMMERCE - STANDARDS - BOULDER

*Time of event should have read 26/08XX Z

